THE FEDERAL BUDGET FOR PUBLIC WORKS INFRASTRUCTURE

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NOTES

Dollar values in the historical charts are expressed as constant dollars using 1984 values. Values in the budget tables, including projections for future years, are expressed in current dollars, without adjustment for inflation.

Numbers in tables may not add to totals because of rounding.

PREFACE

Spending on the nation's infrastructure has been the focus of considerable debate, both because of the importance of having a sound physical infrastructure for future economic growth and because of concerns with finding ways to reduce the federal deficit. This study, undertaken at the request of the Senate Committee on Environment and Public Works, examines the likely effect of recent policy and budget proposals for seven areas of public works infrastructure: highways, aviation, mass transit, wastewater treatment, water resources, water supply, and railroads. The report reviews the development of current federal policy and then focuses on ways to improve the effectiveness of these programs in light of existing budgetary constraints. In keeping with the Congressional Budget Office's mandate to provide objective analysis, the study offers no recommendations.

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Rudolph G. Penner
Director

July 1985

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SUMMARY

Last year the federal government spent nearly $30 billion on programs to help build, maintain, and operate the nation's public works infrastructure. State and local governments provided another $60 billion. Despite these substantial sums, concern has been voiced that overall spending is still inadequate, and could bring about a decline in the physical condition of the nation's infrastructure that could restrict future economic growth. At the same time, budgetary constraints are forcing all levels of government to make difficult choices among spending programs. As a result, interest has grown in assuring that federal policies--and the state, local, and private spending they influence--provide the most cost-effective investment in and operation of the nation's public works infrastructure.

Debate over public works infrastructure often focuses on a single question--is the nation spending enough to meet its infrastructure needs? This question has no simple answer and, indeed, may be unanswerable. What is reported as "need" depends, in large part, on the conditions under which the federal government will support spending for each infrastructure component and the level of that support. Most estimates of needs contain a mix of projects with varying rates of return, often including some with negative returns. Dividing projects into a group that is needed and a group that is not is somewhat arbitrary, in part because there is no generally accepted way to rank projects by economic and social merit. Debate over the infrastructure budget therefore might best focus on ways to encourage the most cost-effective use of available financial resources.

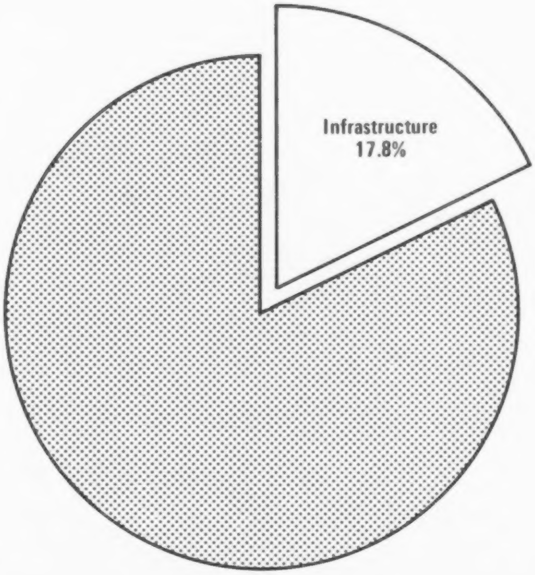
This report examines current federal policies for infrastructure spending and presents options for change, including the proposals contained in the Administration's 1986 budget and in budget resolutions passed by the House and the Senate. These proposed changes are analyzed within the context of the historic purpose of the programs and the recent trends in federal and state spending. The study focuses on seven components of public works infrastructure--highways, aviation, mass transit, wastewater treatment, water resources such as ports and inland waterways, water supply, and railroads. All of these components offer services that directly support the U.S. economy, have facilities with high fixed costs, and require a substantial amount of public funding.

TRENDS IN FEDERAL SPENDING

Federal spending on public works infrastructure accounts for only 3 percent of total federal spending, but almost 18 percent of spending in the nondefense discretionary portion of the federal budget (see Summary Figure 1). In recent years, this section of the budget has been the major focus of efforts to slow the growth in the federal deficit. These pressures to limit spending have resulted in a 13 percent decline in the real value of overall federal spending on infrastructure in the 1980s, after an increase of 46 percent in the 1970s (see Summary Figure 2).

Summary Figure 1.

Infrastructure As Share of Federal Nondefense Discretionary Spending (1984 Outlays = $152.9 Billion)



SOURCE: Congressional Budget Office from data in *Budget of the United States Government*.

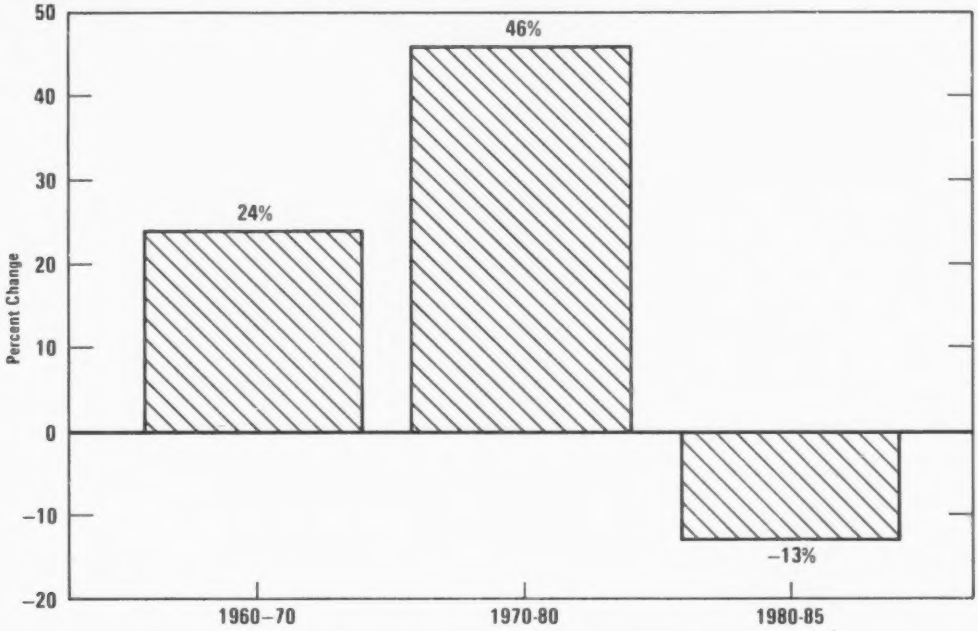
While total public spending on infrastructure increased during the 1970s, this growth masks an overall decline in capital funding (see Summary Figure 3, p. xiv). The sharpest decrease occurred among state and local governments, even though their spending for infrastructure operations has doubled in the past 15 years. The level of federal funds devoted to construction of infrastructure, however, has not changed much since the late 1960s. Most of the growth in federal spending has been in funding for operations, particularly for mass transit and the air traffic control system.

BUDGET PROPOSALS FOR FISCAL YEAR 1986

The Administration's 1986 budget request calls for slightly greater spending on infrastructure than in 1984. This increase is somewhat misleading, however, since most of it stems from greater highway spending following

Summary Figure 2.

Change in Federal Infrastructure Outlays, Fiscal Years 1960-1985



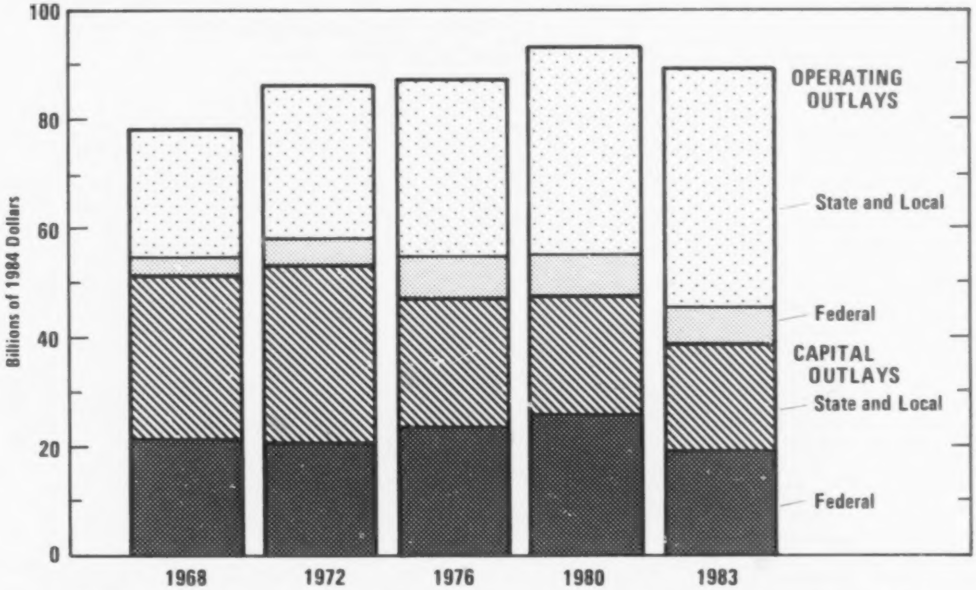
SOURCE: Congressional Budget Office from data in *Budget of the United States Government*.

the increase in the federal motor fuel tax enacted in 1982 and from additional spending to support modernization of the air traffic control system. Funding would be cut for the other five parts of public works infrastructure. By 1988, spending would be about 18 percent below the Congressional Budget Office's projection of current policy. Relative to 1984 spending, the Senate resolution would result in an 11 percent increase in 1988 and the House resolution, a 22 percent increase. Compared with what would be called for under current policy, however, the Senate and House resolutions represent spending reductions of 12 percent and 3 percent, respectively.

Many of the Administration's proposed changes represent significant shifts in the division of responsibility among the federal government, state

Summary Figure 3.

Public Spending for Infrastructure by Purpose and Level of Government, Fiscal Years 1968-1983



SOURCE: Congressional Budget Office from data in *Budget of the United States Government*, and in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances*.

and local authorities, and the private sector. The Administration has justified many of its proposed reductions on the grounds that the programs to be cut provide primarily local rather than national benefits--for example, the proposed major cutbacks in mass transit (including elimination of operating aid) and the phaseout of construction grants for large airports. The phaseout of EPA grants for construction of wastewater treatment facilities is justified in part by the local nature of the benefits provided and in part by the severe budgetary constraints faced by the federal government. Budget pressures, as well as arguments regarding fairness among different groups of users, also underlie the Administration's proposal to eliminate or significantly reduce subsidies for Amtrak, deep-water ports, and the inland waterway system.

INFRASTRUCTURE SPENDING BY PROGRAM

Current federal spending on infrastructure totals about $30 billion (see Summary Table). In 1984, highways accounted for the largest share--nearly 40 percent--of federal outlays for infrastructure. Water supply, which is financed primarily by local governments, accounted for the smallest share, 2.4 percent (see Summary Figure 4). The major changes proposed by the Administration for each area of public works infrastructure, and alternatives, are discussed below.

Highways

Federal spending on highways is financed by a number of user taxes paid into the Highway Trust Fund. Because authorizations from the fund exceed expected revenues, the cash balance is likely to be exhausted in 1990. Either revenues must increase or expenditures must fall for the trust fund to achieve long-run stability. The Administration's 1986 budget proposes to freeze obligations at the 1985 level--a 10 percent cut from the authorized level for 1986. While this would alleviate the projected imbalance between Highway Trust Fund receipts and outlays, it would not reduce spending sufficiently to represent a permanent solution. It also means that state and local governments would determine how the remaining federal obligations would be allocated among programs. Other options to reduce federal spending on highways include returning responsibility for largely local roads to state and local governments, reducing the federal matching share for parts of the federal program, and eliminating the current exemptions from federal highway taxes. The Senate and House resolutions both contain spending freezes. The Senate version is stricter--the equivalent of a three-year freeze.

Aviation

The Federal Aviation Administration (FAA) spends about $5 billion a year on aviation, most of it to build and operate the air traffic control system. These funds include $1 billion a year to help build and improve airports. The Administration as well as the Senate and the House would keep federal aviation policy fairly close to current policy. The Administration's 1986 budget would increase the portion of FAA operating costs supported by the Airport and Airway Trust Fund from about 40 percent to 75 percent, thus reducing payments from the general fund by nearly $1 billion. The

SUMMARY TABLE. FEDERAL SPENDING FOR INFRASTRUCTURE, FISCAL YEARS 1984-1988
(Outlays in billions of current dollars)

Program	1984	1985 a/	1988 a/ Current Policy	1988 a/ Administration Proposal	1988 a/ Senate Resolution	1988 a/ House Resolution
Highways	10.8	13.2	15.9	14.6	14.3	15.3
Aviation	3.9	4.2	5.5	5.0	5.1	5.4
Mass Transit	3.8	3.8	4.3	2.4	3.5	4.3
Wastewater Treatment	3.0	3.1	2.8	2.5	2.7	2.7
Water Resources	3.8	3.9	4.1	3.1	3.4	3.9
Water Supply	0.6	0.7	0.7	0.5	0.6	0.7
Railroads	1.2	1.1	0.9	0.1	0.6	0.8
Total	27.2	30.0	34.2	28.2	30.3	33.1

SOURCE: Congressional Budget Office.

NOTE: In addition, about $4 billion a year is provided indirectly by exempting from federal taxation the interest paid on state and local bonds.

a. Outlays for 1985 and 1988 are CBO estimates.

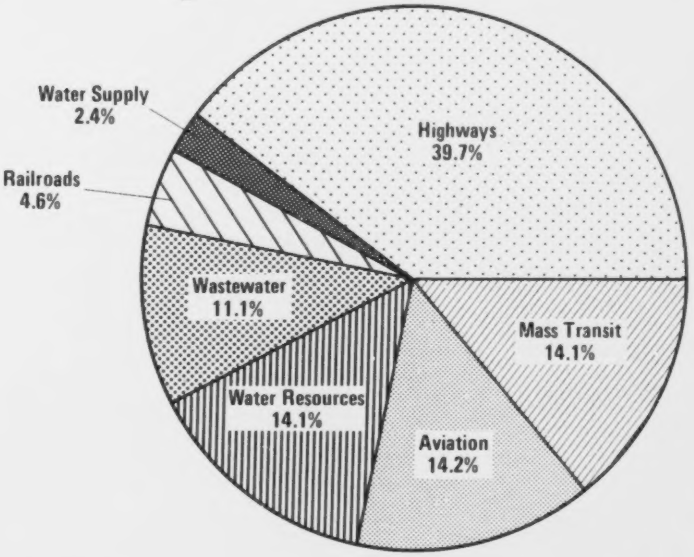
Administration's proposal would reduce funding for air traffic control modernization by 20 percent to 30 percent below current policy levels through 1990. The Administration also proposes to "defederalize" the airport grant program, starting in 1988, by eliminating grants for the larger airports. It is unclear, however, whether the current 8 percent federal tax on passenger tickets would be reduced. Other options could include raising user fees for general aviation, particularly corporate jets, both to achieve more equitable distribution of costs among different types of users and to promote more efficient use of congested airports.

Mass Transit

Through the Urban Mass Transportation Administration, the federal government provides about $4 billion a year in grants to improve, expand, and operate mass transit systems. The Administration's 1986 budget

Summary Figure 4.

Federal Spending for Infrastructure by Area (1984 Outlays = $27.2 Billion)



SOURCE: Congressional Budget Office from data in *Budget of the United States Government.*

proposals would eliminate all federal operating assistance ($0.8 billion), cut federal capital grants by more than one-half to $1.6 billion, and increase the nonfederal matching share (currently 20 percent to 25 percent) to a minimum of 30 percent. All future capital funds would be allocated by formula, and discretionary grants for major capital investments such as new subway systems would no longer be available. The Senate would reduce spending by about 20 percent, while the House would continue very close to current policy. Alternative strategies might include reducing to 50 percent the high federal matching share (now 75 percent to 80 percent) so that local governments would have a greater incentive to build cost-effective projects.

Wastewater Treatment

Largely through the Environmental Protection Agency (EPA), the federal government provides about $3 billion a year in grants to state and local governments to help them meet federal standards for clean water. The Administration has proposed phasing out EPA grants for wastewater treatment by 1990. This would eliminate most of the federal commitment to support these local investments, but it also could put an unmanageable financial strain on small or rural communities and compromise clean water goals. The Senate and the House also call for a phaseout of federal grants but over a much longer period of time. As EPA's construction grants were phased out, these Congressional proposals would phase in federal block grants to help capitalize state-operated revolving funds as a permanent means of finance. These funds could ease the transition away from federal support and provide much of the capital necessary to meet remaining treatment needs. Initial federal and state outlays could be high and user fees might increase, but the investments financed by such a fund could be more efficient and take place more rapidly than under current policy.

Water Resources

The federal government plays a major role in building and maintaining the nation's water resources, including inland waterways, ports and harbors, and dams. Under current policy, most types of water projects are federally subsidized--state and local contributions account for 30 percent, on average, of combined construction and operation expenses. The Administration's 1986 budget calls for new user fees for federally maintained shipping channels and inland waterways totaling $3.3 billion over the 1986-1990 period. These programs would otherwise be supported by general revenues. The Senate resolution calls for user fees that are higher than current policy but below those requested by the Administration. The House resolution remains close to current policy.

The Administration also calls for faster repayment of past federal expenditures for hydroelectric power. Compared with current policy, this proposal would yield an additional $3.4 billion in revenues over the 1986-1990 period. Other types of projects such as irrigation and flood control would remain heavily subsidized.

Increased local financing of water projects and wider application of user fees could help ensure that future federal investments in water resources will be more cost effective and yield benefits that are priced on the basis of the true economic costs of producing them. But users of federally supplied water and related services, such as navigation, flood control, or recreation, would pay much more for these benefits than they now do.

Water Supply

The federal role in water supply historically has been small relative to that of state and local governments, with federal aid provided through a variety of programs targeted to sparsely populated, rural regions and fiscally troubled urban centers. While the Senate and the House resolutions remain close to current federal policy, the Administration's budget for 1986 proposes to cut direct federal aid for water supply by about 38 percent to its lowest level in more than 20 years. This move would force localities to seek alternative sources of development capital--for example, issuing more tax-exempt municipal bonds, which in turn would require higher water rates. States also might have to become more involved, either directly by financing local projects or indirectly by removing impediments to increased local borrowing. Alternatively, water conservation could defer many capital requirements, particularly where additional supply capacity is needed.

Railroads

The subsidy provided to the National Rail Passenger Corporation (Amtrak) comprises most of the federal aid to railroads. The Administration has proposed ending all aid to Amtrak in 1986. The net savings from such a proposal would depend on the level of severance payments made to Amtrak workers who lost their jobs. Existing contracts call for up to six years' pay per worker, totaling an estimated $2.1 billion over the next five years. The House and the Senate would continue Amtrak subsidies but at a level below current policy.

The major budgetary issue for freight service is when and how the federal government should sell its 85 percent ownership of the Consolidated Rail Corporation (Conrail) to the private sector. The Administration has proposed a privately negotiated sale to the Norfolk Southern Corporation. Other options include a public sale of stock and continued federal ownership of Conrail.

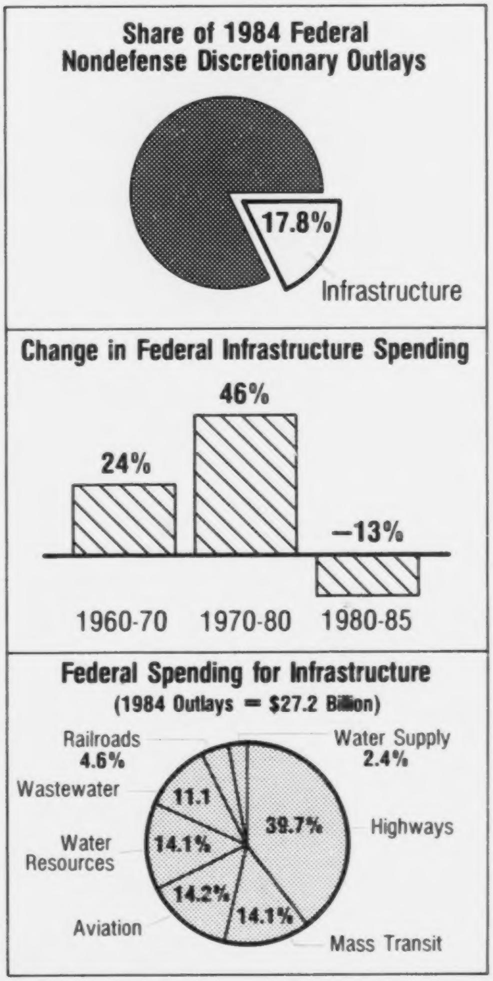
CHAPTER I

INTRODUCTION AND OVERVIEW

Federal, state, and local governments spend about $90 billion a year to operate, maintain, and expand the capacity of the nation's public works infrastructure. While federal spending accounts for only about one-third of this total, the structure of the federal programs and the allocation of these funds among the different components of infrastructure play a vital role in the effectiveness of these public works.

Federal infrastructure programs are also the focus of much of the debate over ways to control the federal deficit. To the extent that spending levels are trimmed, it is important that changes be made in a way that encourages the most cost-effective use of remaining federal funds as well as the resources of state and local governments and the private sector.

This report defines public works infrastructure to include highways, aviation, mass transit, wastewater treatment, water resources (ports, inland waterways, and multipurpose dams), water supply, and railroads. These systems have been selected for analysis because the services they provide directly support the na-



Share of 1984 Federal Nondefense Discretionary Outlays

Change in Federal Infrastructure Spending

Federal Spending for Infrastructure
(1984 Outlays = $27.2 Billion)

Annual direct federal spending for infrastructure dropped 13% from 1980-1985, following increases of 24% (1960-1970) and 46% (1970--1980). Federal spending for infrastructure accounted for nearly 18% of federal nondefense discretionary outlays in 1984. Almost 40% of federal infrastructure spending in 1984 was for highways.

tion's economy, they are characterized by facilities with high fixed costs and a long physical life, and they require a high level of public investment. The development of current federal policy for these areas--including major trends in federal, state, and local spending--and the major spending and policy options proposed by the Administration and others are discussed in the chapters on the individual infrastructure programs.

DEVELOPMENT OF THE FEDERAL ROLE

The federal government has been involved with public works infrastructure almost since the beginning of the republic. The Army Corps of Engineers was directed by the Congress in 1826 to clear rivers for navigation and to help build and maintain ports and harbors, and the National Road from Washington to Ohio was constructed in the 1820s and 1830s. Beyond these efforts, however, active federal involvement in public works infrastructure did not develop until the latter part of the nineteenth century. [1]

Starting in the 1860s, the federal and state governments provided land grants, equal to 9.3 percent of the area of the continental United States, to railroads that built new routes. [2] The Bureau of Reclamation (established in 1902) and the Corps of Engineers also built many western dams and irrigation projects to encourage more intensive agricultural development.

Infrastructure programs began to proliferate in the early 1900s. The federal highway program began in 1916, the federal air traffic control system in the 1920s, grants for rural water supply systems in the 1930s, and airport grants in the 1940s. Federal grants for wastewater treatment and mass transit did not start until the 1960s, and the first federal aid for intercity rail passenger service was given in the 1970s.

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[1] A more active federal role had been proposed and debated, but rejected. The Gallatin Report, written by one of Thomas Jefferson's cabinet officers, made a strong case that the nation's economic growth depended on new transportation facilities to connect the undeveloped western portions of the country with the more established eastern centers. While the report recognized that this infrastructure did not have to be built by the federal government, it advocated an active federal role if the private sector and the states did not provide adequate facilities. Its recommendations were largely ignored, in part because of high costs during a period of economic recession but largely because of disagreement over which regions would benefit the most from any improvements--some eastern states were concerned over the loss of population and economic growth to the West. Thus, development of most of the nation's early infrastructure fell to private firms and individual states.

[2] Most grants were for routes west of the Mississippi River, with more than 70 percent provided by the federal government. Revenues from the sale of this land helped to finance most of the transcontinental railroads. In return, western railroads were built sooner than they might have been otherwise, and the federal government received reduced freight rates.

The federal highway program represented an important landmark that, nearly 70 years later, still forms the basic model for most infrastructure programs: the federal government enters into a partnership with the states, whereby the states select, build, and operate projects, while the federal government provides funding in the form of matching grants. [3] This partnership is typical of current federal programs for highways, mass transit, wastewater treatment, water supply, and airports; water resource programs and rail passenger services, however, are provided directly by the federal government.

RECENT TRENDS IN INFRASTRUCTURE SPENDING

Federal spending on infrastructure in 1984 totaled nearly $30 billion--just 3 percent of all federal spending but more than one-sixth of spending in the nondefense discretionary section of the budget, which includes natural and human resources, international affairs, and transportation, space, and science. Appropriations for discretionary programs must be renewed annually.

Overall government spending on public works infrastructure has shown modest change in recent years, increasing from about $78 billion in 1968 (in 1984 dollars) to a peak of about $94 billion in 1980, then falling slightly to $90 billion in 1983 (see Figure 1). Three dramatic changes have occurred in the composition of this spending, however:

- Spending on operations has increased from one-third of the total in 1968 to 60 percent in 1983;
- Spending is less concentrated on a few infrastructure systems; and
- State spending, especially for operations, has increased.

The growth in infrastructure spending over the past 15 years has been driven by the twofold increase in state and local spending for operations, which at $45 billion now totals about one-half of infrastructure spending by all levels of government. As shown below in Figure 1, capital spending by state and local governments dropped by nearly 35 percent, from $30 billion in 1968 to less than $20 billion in 1983. In contrast, federal spending on infrastructure remained fairly steady at between $25 billion and $30 billion a year, with a smaller shift in the proportion devoted to operating costs.

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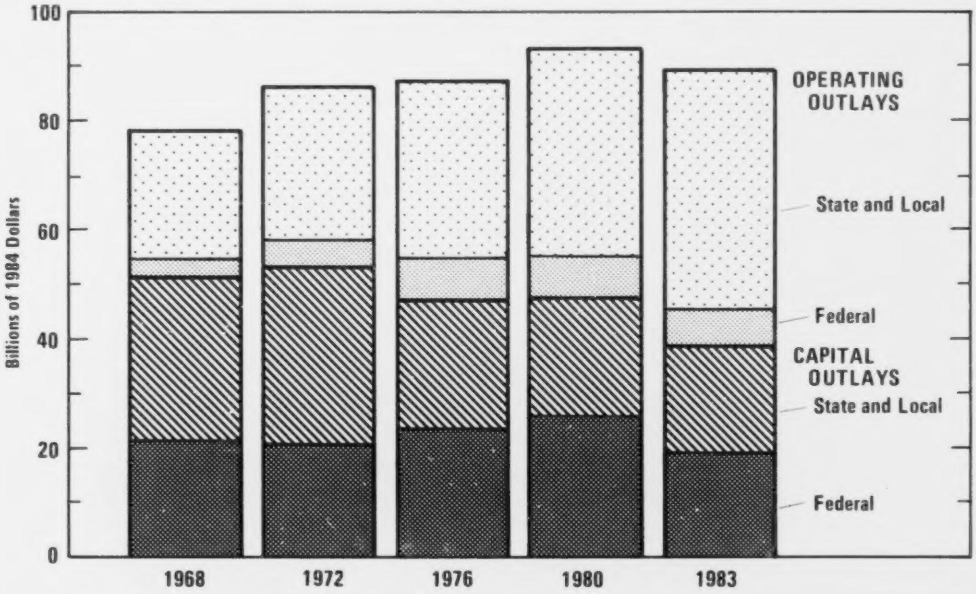
[3] See Congressional Budget Office, *Highway Assistance Programs: A Historical Perspective* (February 1978).

Direct Federal Spending

The distribution of federal spending among the different infrastructure areas has changed in the last 15 years (see Figure 2). In the late 1960s, three programs accounted for nearly all federal spending: highways (60 percent), water resources (24 percent), and aviation (10 percent). By 1984, they accounted for only 68 percent of the total, largely because of the growth of

Figure 1.

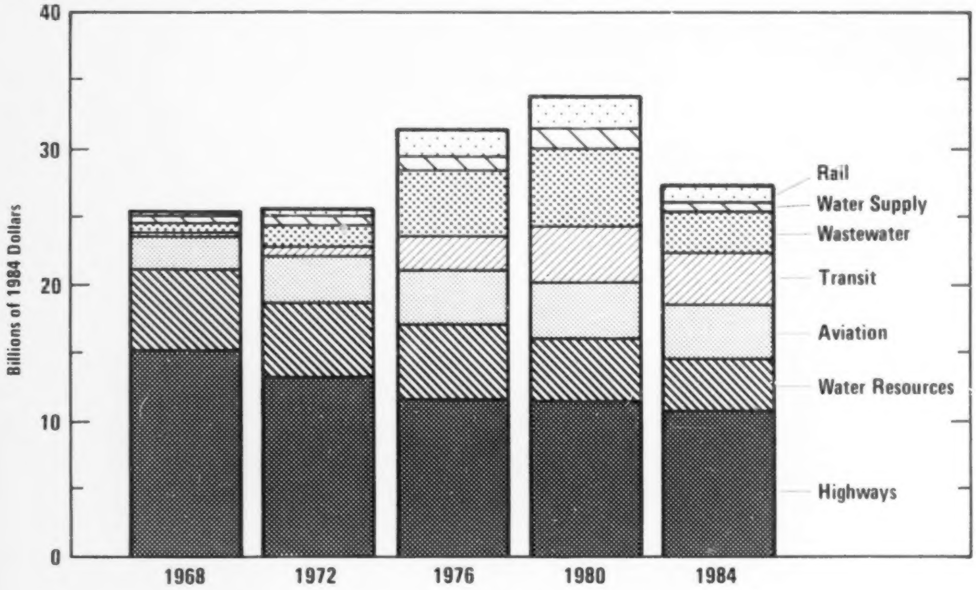
Public Spending for Infrastructure by Purpose and Level of Government, Fiscal Years 1968-1983



SOURCE: Congressional Budget Office from data in *Budget of the United States Government*, and in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

Figure 2.

Federal Spending for Infrastructure by Area, Fiscal Years 1968-1984



SOURCE: Congressional Budget Office from data in *Budget of the United States Government*.

federal assistance to mass transit, wastewater treatment, and railroads.[4] With the inclusion of substantial new programs in these areas and the decline in federal highway spending that occurred during the 1970s, federal spending on infrastructure was more evenly spread across systems by the end of the decade. The distribution of capital spending showed a similar pattern, with essentially all federal funds devoted to highways and water resources in the late 1960s. Today, significant capital spending occurs in most areas of infrastructure (see Figure 3).

Indirect Federal Spending

In addition to federal grants and other direct spending, considerable federal aid is provided indirectly each year through the tax-exempt bond market. Under current law, most capital spending on infrastructure can be financed

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4. Federal spending on water supply showed little change and remains a relatively small portion (about 2 percent) of total federal spending for infrastructure.

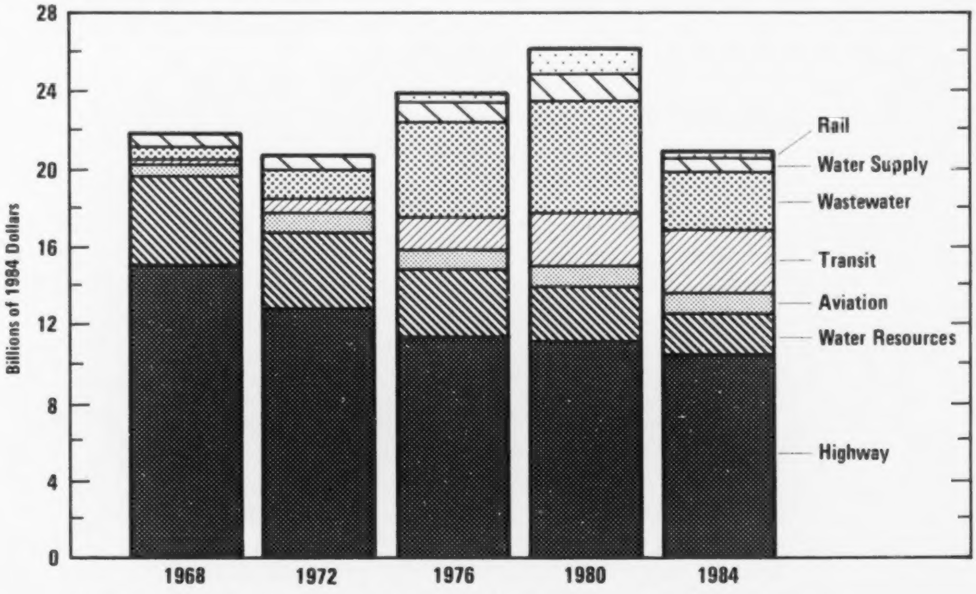
with bonds whose interest is exempt from federal income taxes. The lower financing costs of these bonds--typically two to three percentage points below the interest rates for comparable taxable bonds--provides an incentive for state and local governments to build these projects. This interest rate subsidy is paid for by the federal government through reduced income tax receipts. The overall cost to the federal government is substantial--an estimated $4 billion in 1986. While it is difficult to allocate this sum among the different parts of infrastructure, for some areas such as water supply its value probably exceeds that of direct federal aid.

State and Local Spending

Over the past 15 years, state and local spending on public works infrastructure has shown steady growth, increasing from $53 billion in 1968 to

Figure 3.

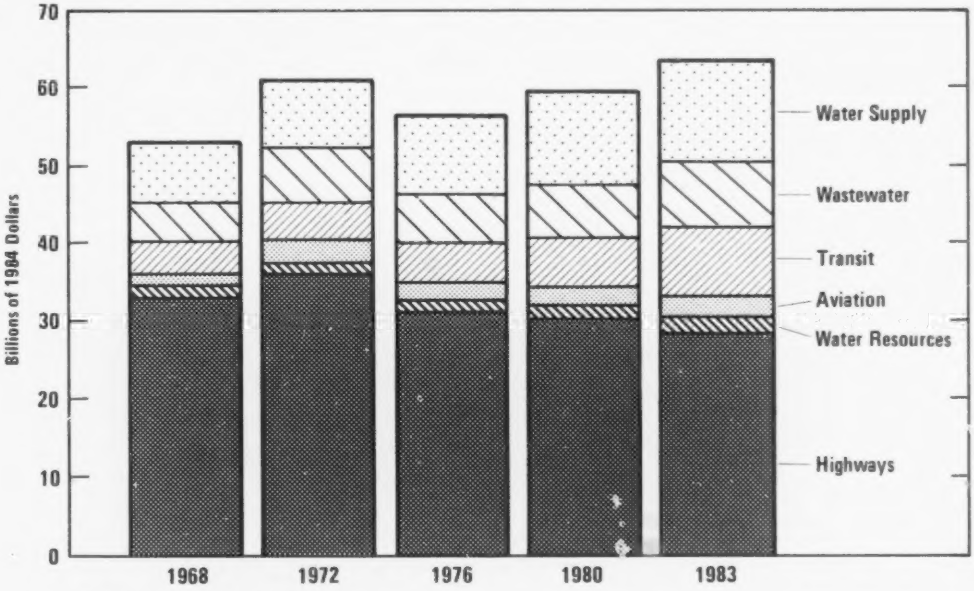
Federal Capital Spending for Infrastructure by Area, Fiscal Years 1968-1984



SOURCE: Congressional Budget Office from data in *Budget of the United States Government.*

Figure 4.

State and Local Spending for Infrastructure by Area, Fiscal Years 1968-1983



SOURCE: Congressional Budget Office, from Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

NOTE: Excludes state and local spending for rail, for which data are not available.

$64 billion in 1983 (see Figure 4, above).[5] Spending on capital improvements represents only about 31 percent of the total in 1983, however, down from 56 percent in 1968. This shift in emphasis reflects higher operating costs for water supply, mass transit, and wastewater treatment. Part of this increase may represent the need to operate the new transit and wastewater facilities built with federal grants. The decline in nonfederal capital spending is almost completely accounted for by the 50 percent drop in highway spending, from $20 billion in 1968 to about $10 billion in 1983 (see Figure 5). State and local capital spending on other areas of infrastructure has shown little change, perhaps because these are the areas of greatest growth in the federal program.

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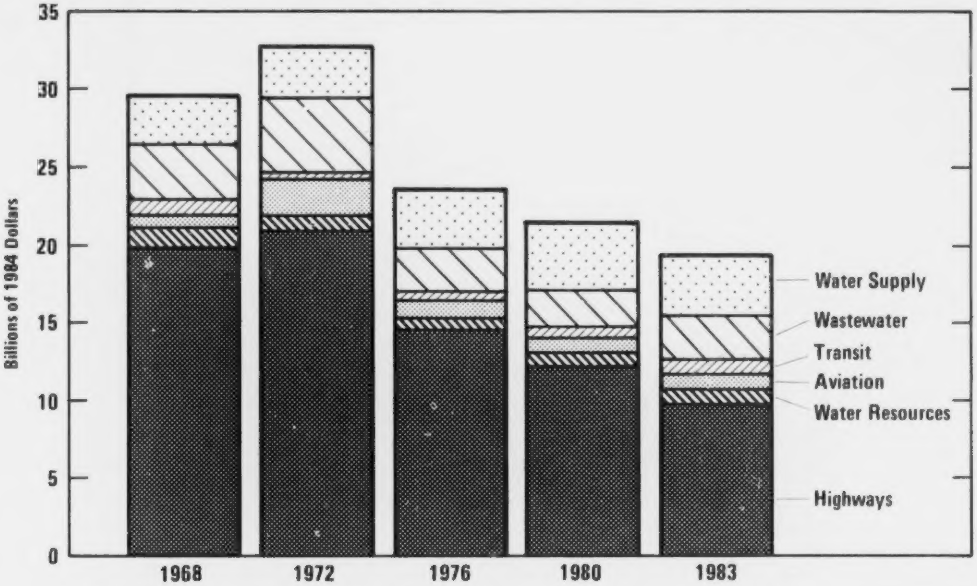
[5] Data on spending by state and local governments is much less reliable than that for federal spending and should be treated with caution.

Figure 5.

State and Local Capital Spending for Infrastructure by Area, Fiscal Years 1968-1983



SOURCE: Congressional Budget Office, from Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

NOTE: Excludes state and local spending for rail, for which data are not available.

CURRENT POLICY ISSUES

Much of the current debate over infrastructure policy concerns estimates of what is "needed" to fix the nation's infrastructure. The magnitude of these estimates varies tremendously, but attempts to reconcile them and arrive at some single, correct estimate appear fruitless for several reasons. First, from a practical point of view, estimates depend on what is defined as infrastructure, on the length of time over which the estimates are made, on what physical standards are set as the norm, and on the source of data.

Second, and more important, is the problem of defining "needs." The term needs has no economic meaning. Because any analysis of "needs" must be largely subjective, it does little to inform the policy process. The stated level of investment "needs" depends in large part on the incentives contained in existing government programs. For example, the ratio of federal to state funding for highway projects influences the number and type of projects that states propose--yet the latter is often taken as an accurate measure of the need for such projects and hence for federal funding. A recent study by the Congressional Budget Office (CBO) estimates that reducing the federal match for secondary wastewater treatment facilities from 75 percent of total costs to 55 percent should reduce the apparent level of needs by about 30 percent.[6]

Further, needs are often defined based on engineering standards that have never been achieved in the past and that bear no relation to the expected economic returns from meeting them. One recent study, for example, found that the costs of removing all highway deficiencies would more than offset the expected economic gains. In contrast, the study concluded, the much lower costs of merely halting deterioration in the nation's highway network would improve economic growth for the economy as a whole, with national income 3.2 percent higher by 1995, employment 2.2 percent higher, and inflation 8 percent lower than if road conditions had continued to deteriorate as in the late 1970s.[7]

An alternative to estimating a level of needs and seeking to meet it derives from the concept that infrastructure projects are not ends in themselves. Rather, their importance to the economy derives from the services they offer. Using this approach, federal programs could be evaluated in terms of the incentives they give to encourage projects that provide these services in a cost-effective way. For example, a previous CBO study found that the federal portion of the nation's infrastructure could be maintained and expanded to meet overall growth of the economy for about $4 billion a year less than current federal spending if major changes were made in the structure of federal programs.[8] These changes, many of which are also discussed in this report, include expansion of user fees, a better alignment of responsibilities among federal, state, and local governments, and reduced emphasis on high federal matches for capital grants.

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6. Congressional Budget Office, *Efficient Investment in Wastewater Treatment Plants* (June 1985).

7. Transportation Systems Center, *Highways and the Economy*, prepared for the Federal Highway Administration, U.S. Department of Transportation (November 1983).

8. Congressional Budget Office, *Public Works Infrastructure: Policy Considerations for the 1980s* (April 1983). No attempt was made, however, to examine possible realignments in state and local programs.

ANALYSIS OF THE BUDGET

Much of the analysis in this report focuses on the effects that different policy proposals might have on the federal budget. To date (July 1985), the Senate and the House have not reached agreement on a federal budget for fiscal year 1986. Thus, the three major proposals presented here include the Administration's 1986 budget request and the separate budget resolutions passed earlier this year by the Senate and the House.[9] The Congressional Budget Office has projected outlays for the three major proposals as well as for an option that assumes no change in current policy (what CBO terms the spending baseline). Where appropriate, additional options are also analyzed.

Because of the time it takes to approve, design, and construct major public works facilities, changes in federal capital spending take several years for their impact to be seen in budget outlays. For this reason, the budget tables in the following chapters show outlays for 1988, along with actual and expected spending for 1984 and 1985. Major changes that affect 1986 spending are discussed in the text. The spending levels shown in these tables are in current dollars; that is, they have not been adjusted for the effects of future inflation. In contrast, all spending shown in the historical charts has been adjusted into dollars of constant purchasing power--in this case, using 1984 values.

An important part of analyzing public works is the distinction between capital and operating expenditures. While most projects can be placed fairly easily into one or the other category, the dividing line between the two is not precise: for example, are major repairs counted as a capital or an operating expense? This study attempts to follow the distinctions contained in federal law. In general, this means that work that extends the life of a facility by several years is considered capital, but routine repairs such as filling a pothole are part of operations.

Some budget terminology is also important in understanding the effect of the different proposals. A key distinction is that made among authorizations, obligations, and outlays:

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9. A number of the proposals in the budget resolutions have changed as the result of negotiations between the two houses. No attempt has been made to include these new options in the paper. In only a few cases are they likely to go beyond the range of spending set by the two resolutions.

- An **authorization** represents the amount that the Congress proposes to spend in a particular area. That amount may later be reduced or modified by appropriations legislation.

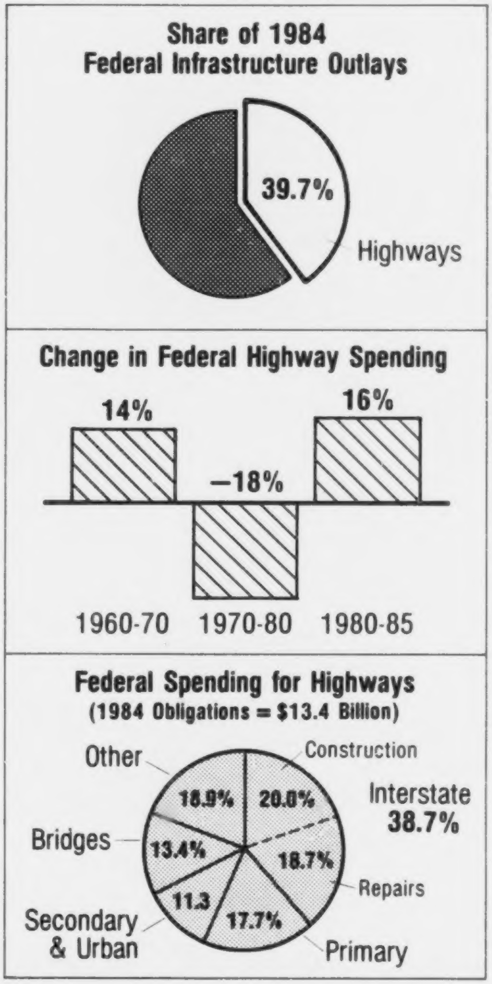
- An **obligation** occurs when a contract is signed to begin a project (for example, a contract between a state highway department and a contractor to start construction work) that legally commits the federal government to make payments once the work is completed. In some cases (highways, for example), the Congress has controlled spending by placing a ceiling on the annual level of obligations that can be approved.

- An **outlay** is simply the actual cash payment from the Treasury.

In any discussion of spending changes, the measure of budgetary effects being used must be clarified. Unless stated otherwise, this report uses outlays as its measure.

CHAPTER II

HIGHWAYS



Federal funding for highways and bridges grew 16% from 1980–1985, after dropping 18% from 1970–1980. In 1984, federal highway spending accounted for 40% of total federal infrastructure spending, with about 40% of these funds devoted to construction and repair of the Interstate system.

In 1984, federal funding for highways and bridges totaled $10.8 billion, or 40 percent of the federal government's total spending for public works infrastructure. The bulk of these funds comes from the Highway Trust Fund, which is supported by a series of user taxes--the most important being the 9-cent-per-gallon federal tax on motor fuel and a series of taxes on large trucks.

The highway program is administered by the Federal Highway Administration within the Department of Transportation. Most federal funds are directed toward a network of heavily traveled roads that form the Federal-Aid Highway System. These routes account for a little more than 20 percent of the nation's roads, but carry nearly 80 percent of its traffic. The Federal-Aid System has several components, the most heavily traveled of which is the Interstate System--a 42,500-mile network of expressways designed to connect major urban areas. Less important through-routes are included on the Primary System. Well-traveled urban roads and major farm-to-market roads are part of the

Urban and Secondary networks, respectively. In addition, federal funds are available for bridges both on and off the formal Federal-Aid System.

DEVELOPMENT OF THE FEDERAL ROLE

Although a federal role in highway construction dates back to the early days of the republic, the modern highway program had its beginnings in the Federal Aid Road Act of 1916. This act established many of the basic provisions of federal highway policy that are still in effect today. The most important of these provisions is the federal/state partnership whereby states retain ownership of roads and responsibility for their construction and maintenance, while the federal government provides financial aid to the states for construction in the form of matching grants. These grants are apportioned according to formulas based on such factors as area, population, and road mileage. 1/

This historic division of effort--federal support of new construction and state support of repair and maintenance--held until the late 1960s, when the deteriorating condition of existing roads led to a gradual change in federal regulations to permit the use of federal funds for major repairs. The first federal program dedicated to repairs on the Interstate System and the creation of a federally funded program to repair bridges occurred in the mid-1970s. Since then, an increasing share of federal spending--now about 60 percent--has been for reconstruction and major repairs.

The bulk of federal highway aid has traditionally been directed toward a network of interconnected arterial routes that link the nation's major cities. These routes are called the Interstate and Primary systems. The Interstate System is a nearly completed network of 42,500 miles of high-speed, high-quality intercity routes. Although it represents only 1 percent of the nation's roads, it carries about one-fifth of all traffic. The Primary System is composed largely of well-traveled intercity arteries--about 260,000 miles--and carries 30 percent of all traffic, including twice as much long-distance traffic as the Interstate System.

Over 95 percent of the Interstate System has been completed. More than half of the estimated cost to complete the remaining 1,200 miles is for routes of predominantly local importance, including beltways and other routes that may link facilities of regional importance or improve traffic

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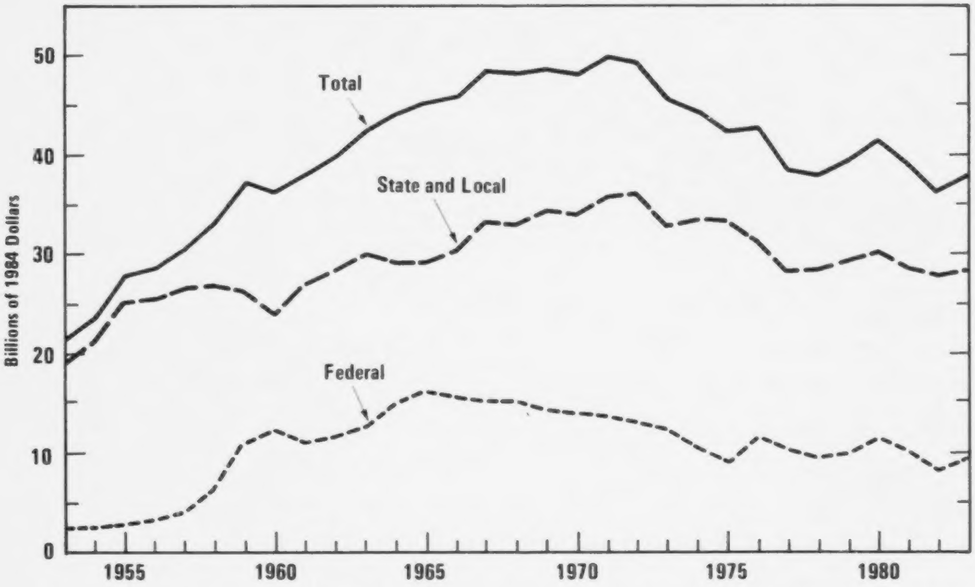
1. See Congressional Budget Office, *Highway Assistance Programs: A Historical Perspective* (February 1978), pp. 2-3.

Figure 6.

Public Spending for Highways by Level of Government, Fiscal Years 1953-1983



SOURCE: Congressional Budget Office from data in *Budget of the United States Government,* and in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

circulation in urban areas but are not part of the network necessary to link major cities. 2/

Trends in Federal Spending

Public spending for highways grew from about $22 billion (in 1984 dollars) in 1953 to a high of $50 billion in 1971 (see Figure 6). Following a period of declining investment during the 1970s, spending has begun to rise again as a result of the Surface Transportation Assistance Act of 1982. This act increased the federal tax on motor fuels (from 4 cents per gallon to 9 cents) for the first time since 1959. 3/

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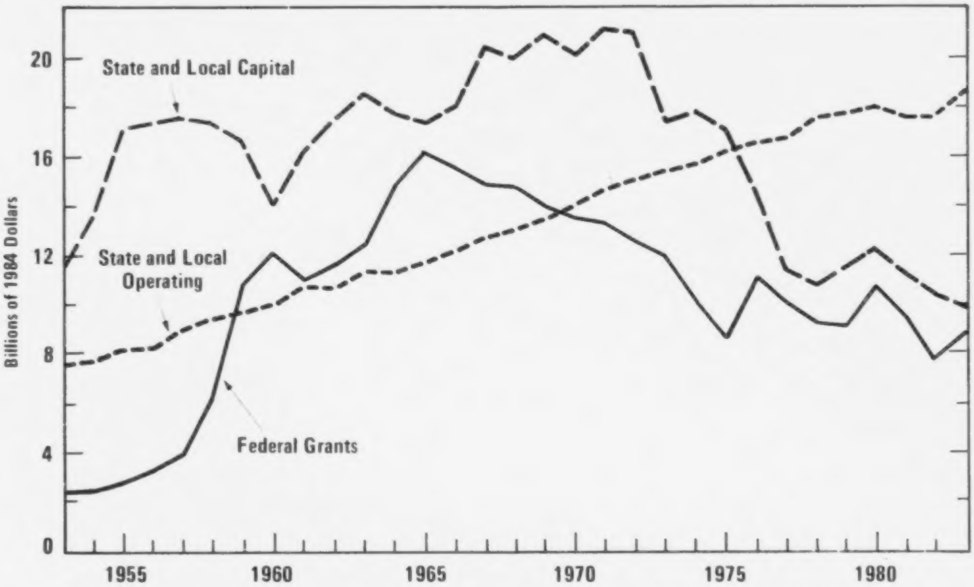
2. See Congressional Budget Office, *The Interstate Highway System: Issues and Options* (June 1982).

3. The tax on diesel fuel has since been raised to 15 cents per gallon, with an offsetting tax credit for cars and light trucks that use diesel fuel.

In 1983, all three levels of government together spent about $38 billion on highways, about half of which represents capital spending for new construction and major repair work. State governments currently supply about half of total spending on highways; the federal government provides around 30 percent (or about the same share it has averaged over the past 25 years). Cities, counties, and other local governments provide the remaining share. Most state and local spending goes for roads not included in any of the various federal systems, for the more locally oriented federal roads (mainly the Secondary and Urban systems), and for routine maintenance on all road systems. State and local spending for highway operations and maintenance has more than doubled over the past 30 years; capital spending, after peaking in the early 1970s, has dropped by roughly half to about $10 billion in 1983 (see Figure 7).

Figure 7.

Federal Grants and State and Local Highway Spending, Fiscal Years 1953-1983



SOURCE: Congressional Budget Office from data in *Historical Tables, Budget of the United States Government*, and in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

Current Federal Policy

Federal funds support three major activities: completing construction of the Interstate System; keeping roads and bridges on the Interstate and Primary systems in good repair; and assisting state and local governments in building and repairing locally important routes on the Secondary and Urban systems.

Most federal highway programs are administered through the Federal Highway Administration (FHWA) within the Department of Transportation.[4] In 1984, federal highway authorizations totaled $14.1 billion, with obligations of $13.4 billion. Almost all these funds were allocated to the Federal-Aid Highway System--roads and bridges that account for 20 percent of the total miles of road but carry 80 percent of traffic (see Table 1). The remaining $2.4 billion serves a wide variety of purposes, ranging from regional development to safety-related grants (removal of railroad crossings, for example). About 40 percent of federal funding in 1984 went for construction of new roads and bridges, with the balance for major repairs and safety-related improvements.

In 1984, federal highway obligations totaled $13.4 billion, including $2.7 billion for Interstate construction, $2.5 billion for Interstate repairs, $2.4 billion for Primary roads, $1.5 billion for Secondary and Urban roads, $1.8 billion for bridges, and $2.5 billion for other programs.[5] The 1985 authorization of $15.2 billion represents an 8 percent increase over 1984, with an additional 2 percent increase to $15.5 billion called for in 1986. In recent years, the Congress has imposed obligation ceilings that restrict the available funds to less than the fully authorized amounts.[6]

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4. Additional programs are administered by the National Highway Traffic Safety Administration (NHTSA), the Department of Agriculture's Forest Service, the Appalachian Regional Development Program, and the Department of the Interior. Spending by NHTSA is included in funding totals throughout this chapter, but the smaller specialized programs are not.

5. Spending for Interstate construction has been held below the authorized level of $4 billion by the inability of the Congress to agree on legislation for allocating funds among the states (the required formula is called the ICE for Interstate Cost Estimate).

6. While authorizations represent permission from the Congress to spend highway funds, obligations occur when a legally binding contract is signed between a state highway department and a contractor. Thus, a ceiling on obligations represents Congress' "final word" on how much can be spent on highways.

TABLE 1. MAJOR PARTS OF THE NATION'S HIGHWAYS

Highways by Financing Category	Miles of Road a/	Percent of Total Traffic a/	Percent of Capital Spending Provided by Federal Government b/	Percent of 1984 Federal Highway Spending c/
Federal-Aid Highway System				
Interstate	41,216	19.0	91	40
Primary d/	257,012	29.5	70	26
Secondary	397,329	8.7	25	4
Urban	137,193	21.9	20	10
Bridges (number)	(259,950)	e/	70	13 f/
Subtotal	832,750	79.1	50	93
Non-Federal-Aid System				
Roads	3,045,076	20.9	N.A.	5
Bridges (number)	(313,700)	e/	N.A.	2 f/
Subtotal	3,045,076	20.9	N.A.	7
Total	3,878,826	100.0	N.A.	100

SOURCE: Congressional Budget Office.

NOTE: N.A. = not available.

a. Department of Transportation, *Highway Statistics 1983*.

b. Department of Transportation, *Final Report on the Federal Highway Cost Allocation Study* (May 1982), p. iv-14. These estimates exclude maintenance.

c. Based on obligations for calendar year 1984, from Federal Highway Administration. These percentages differ from those reported in the figure at the beginning of this chapter because these are calendar year amounts that exclude National Highway Traffic Safety Administration spending, and because the "other" category shown in that figure is here broken out by the type of system for which funds were obligated.

d. Excludes Interstate mileage.

e. Not applicable because total traffic is the same as for roads.

f. Includes bridge repair, rehabilitation, and other bridge work; does not include new construction because new bridges are funded as part of individual systems.

The current federal matching share is 90 percent for Interstate projects and 75 percent for most non-Interstate programs.[7] Because state and local governments spend funds in addition to those needed to match federal dollars, federal funds account for only about half of the spending by all levels of government for construction and major repair of the federal highway system. Very little of these additional state and local funds are used on the Interstate and Primary systems, however. Thus, federal grants account for approximately 70 percent of capital spending for the Primary System but only about 20 percent of total government capital spending on the Secondary and Urban systems (see Table 1).

Federal highway grants are distributed to the states under a variety of different formulas. The Interstate apportionment, for example, is based on a state's share of the cost to complete the entire Interstate System, while the Interstate 4R (Resurfacing, Restoration, Rehabilitation, and Reconstruction) formula is based partly on a state's share of total Interstate mileage and partly on a measure of highway usage (vehicle miles of travel). Apportionment of funds for the Primary and Secondary systems is determined by a state's area, rural population, and mileage of rural and intercity mail routes relative to those of the nation as a whole. With the exception of $200 million from the bridge program, the FHWA has very little discretion over how the funds are allocated among the states. Each state, however, must follow detailed federal guidelines for the types of projects eligible for federal aid.

The bulk of government spending on highways is financed by taxes on highway users. The most important taxes are those on motor fuels--now 9 cents a gallon (including a penny for transit) at the federal level and an average of about 13 cents a gallon at the state level. About 95 percent of federal highway spending is financed by users through the Highway Trust Fund, while approximately 60 percent of state and local spending also comes directly from user fees, primarily state fuel taxes and registration fees.

In 1982, when federal highway taxes were last raised, highway authorizations were also increased--to the point that they exceed expected Highway Trust Fund revenues in 1986 by more than $2 billion. Receipts from current highway taxes grow by only 1 percent to 2 percent a year as improved fuel economy offsets growth in the number of miles driven. Under current policy (that is, with spending increased only for inflation), authori-

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7. States with large amounts of federal land (mostly western states) receive federal matching shares of up to 95 percent for the Interstate.

zations will exceed expected income by $4.4 billion in 1990. As a result of this imbalance, the trust fund will be in financial danger in 1989 and will run out of cash in 1990.

BUDGET PROPOSALS FOR FISCAL YEAR 1986: ISSUES AND ALTERNATIVES

The major issues in highway policy involve alternatives for solving the financial problems that face the Highway Account of the Highway Trust Fund.[8] If spending is to be reduced, is it best to do this with a general, untargeted cut as proposed by the Administration or by changing the mix of highways that the federal government supports? Alternatively, should the federal motor fuel tax be increased again? These issues, in turn, raise questions about the appropriate division of responsibility among federal, state, and local governments. Possible strategies for addressing these issues include targeting federal aid exclusively to the roads of greatest national importance; reducing the federal matching share on certain types of highway grants; and modifying existing federal law that prohibits tolls on highways built with federal assistance.

The Administration's Budget Proposals

In an effort to reduce the federal deficit and to alleviate financial pressures on the Highway Trust Fund, the Administration proposes to freeze both 1986 and 1987 obligations for Federal-Aid Highway programs at the 1985 level of $13.2 billion.[9] This is about $1.4 billion below the ceiling authorized in the Surface Transportation Assistance Act of 1982, but higher than the $12.75

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[8] The Highway Trust Fund also contains a separate Mass Transit Account, funded by receipts from 1 cent per gallon of the motor fuel tax. This account is in strong financial condition.

[9] Most authorizations from the Highway Trust Fund are treated as contract authority: that is, the Secretary of Transportation can enter into legally binding agreements (usually with state highway departments) for the construction of highway projects without prior appropriations. For most federal programs, federal funds cannot be committed until sums--usually for less than the authorized amount--have been appropriated by the relevant appropriations committee. The Budget Act provides an exception to this rule for authorizations from trust funds financed by user fees. While this provision gives greater financial certainty for construction programs, it also limits the ability of the Congress to control spending on a year-to-year basis. As a result, in recent years, the Congress has imposed ceilings on annual obligations.

billion obligation ceiling recently passed by the Senate (S. 391). The President's budget calls for a drop in authorizations of only 1.4 percent below the $15.7 billion already authorized for 1986. The stricter limit on obligations, however, means that by 1988, highway outlays would be some $1.4 billion or 8 percent below current policy (see Table 2). The Administration's proposal does not indicate how the reduced obligations would be distributed among the eligible federal highway programs. As in the past, the states presumably would make these decisions.

Both the Senate and House resolutions take approaches similar to that of the Administration: that is, they impose a ceiling on highway obligations rather than make specific program cuts. The House resolution calls for a one-year freeze at 1985 obligation levels with adjustments for inflation thereafter. This is somewhat less restrictive than the Administration proposal and would cut highway spending relative to current policy by 4 percent in 1988. The Senate resolution would reduce obligations for 1986 to about $500 million below the 1985 level, with small increases for 1987 and 1988 and full adjustment for inflation thereafter. This action would cut highway outlays by 10 percent in 1988.

Under the Administration's proposal, highway safety programs would be merged into a single agency (the National Highway Traffic Safety Administration) within the Department of Transportation, and obligations for these programs also would be frozen at 1985 levels. The Administration's budget proposed the elimination of the $100 million program that funds highways in national parks, a suggestion that has since been withdrawn.

Freeze Obligations for 1986 and 1987. The Administration's proposal to freeze obligations at the 1985 level represents a decrease in real highway spending. In effect, this is an untargeted cut in the highway program of about 4 percent a year. If such a freeze were continued in the foreseeable future, the current $10 billion in cash held by the fund would be able to cover outlays through 1992.

While the Administration's proposal to reduce spending would alleviate the short-term cash flow problems in the trust fund, it is not a long-term solution. A spending cut of an additional $1 billion a year would be necessary to achieve a long-term balance between outlays and receipts. Some critics view the Administration's proposal as an across-the-board cut that does not attempt to establish national priorities. In effect, they argue, national priorities would be set by state highway departments as they select which projects to build within the obligation ceiling. Options for a smaller but better-targeted program are discussed in the next section.

TABLE 2. FEDERAL SPENDING FOR HIGHWAYS, FISCAL YEARS 1984-1988
(Outlays in millions of current dollars)

			1988			
Program	1984	1985	Current Policy	Administration Proposal	Senate Resolution	House Resolution
Federal Highway Administration						
Federal-Aid Highways a/	10,227	12,650	15,550	14,250	13,929	14,900
Highway Safety b/	35	51	50	18 c/	50	50
Miscellaneous Programs d/	317	260	56	13	53	53
Subtotal	10,579	12,961	15,656	14,281	14,032	15,003
National Highway Traffic Safety Administration						
Operations and Research	79	83	94	94 c/	91	91
Highway Traffic Safety Grants e/	119	133	193	182 c/	188	188
Subtotal	198	216	287	276	279	279
Total	10,777	13,177	15,943	14,557	14,311	15,282

SOURCE: Congressional Budget Office.

NOTE: Outlays for 1985 and 1988 are CBO estimates.

a. Includes funding for the Interstate, Primary, Secondary, and Urban systems, bridge repair and rehabilitation, administration, and research.

b. Includes highway safety research and development, highway-related safety grants, and motor carrier safety.

c. The Administration will propose legislation merging most highway safety programs under NHTSA in 1986.

d. Includes off-system roads, territorial highways, and various other programs that no longer require appropriations; also includes access highways to public recreation areas on certain lakes, rail-highway crossings, and four other small programs that the Administration has proposed ending in 1986.

e. Includes miscellaneous safety programs.

Alternative Strategies

Given the projected shortfall in the trust fund, the Congress faces a choice between two options: decrease federal highway spending or increase highway taxes.[10] The Administration has taken the former approach, in effect decreasing spending by freezing obligations at the 1985 level for two years. Federal spending could also be reduced in other ways; for example, by limiting the federal involvement in highway construction to only those routes that are of national priority, or by lowering the current 90 percent federal match for reconstruction projects. Alternatively, additional revenues could be brought in by increasing highway taxes--either by raising the federal tax on motor fuel or by allowing the collection of tolls, under certain conditions, on federally financed highways.

Limit the Federal Role. Today, only two-thirds of federal highway spending supports the two most nationally oriented road systems--the Interstate and Primary systems--compared with 90 percent 15 years ago. This shift occurred as federal highway programs expanded to include many roads that are of greater interest to states and localities than to the federal government. The definition of the Interstate System, for example, has grown as a result of the financial advantage conferred on states by the 90 percent federal matching share; this high match has encouraged states to include highway projects in the Interstate System that may be important locally but provide few benefits from a national perspective. In addition, close to $3 billion in federal authorizations is devoted annually to the locally oriented Secondary and Urban systems and to programs representing a mix of safety, economic development, and special regional concerns of particular interest to state and local governments.

To refocus federal highway programs on the roads of greatest national priority, federal funding of the Interstate Highway System could be concentrated exclusively on unbuilt routes that are essential to a national, interconnected system of highways.[11] These routes would require about $1 billion a year out of the current $4 billion a year in authorizations for Interstate construction, thus reducing federal outlays by $11 billion over the

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[10] A third option would be to use general revenues to finance some (or perhaps all) highways. While this would abolish part (or all) of the Highway Trust Fund, it would have no effect on the overall budget deficit or on attempts to improve the effectiveness of existing programs. For a discussion of the pros and cons of financing transportation through trust funds versus general funds, see Congressional Budget Office, *Transportation Finance: Choices in a Period of Change* (March 1978).

[11] See Congressional Budget Office, *The Interstate Highway System: Issues and Options* (June 1982).

1986-1990 period. Alternatively, the federal government could return financial responsibility to state and local governments for Secondary and Urban road systems, which currently account for an additional $11 billion in federal outlays. The spending reductions from a more limited federal role in highways would result in sufficient savings to cover the $11.1 billion shortfall in the Highway Trust Fund that is projected over the next five years.

Such a shift in federal and state highway roles without a corresponding shift in tax resources could place a substantial burden on state governments, however, forcing them either to spend less on highways or to increase taxes. This burden might be eased by reducing the federal tax on motor fuel by 2 cents a gallon, thereby permitting the states to increase their taxes by the same amount, which would raise revenues of $2.3 billion a year--enough to offset the reduced federal aid--without an increase in the overall tax burden on users. Such a change in federal taxes, however, would offset any help that reduced outlays would provide the trust fund. Alternatively, the states could be provided with an appropriate portion of revenues from the recent increase in the federal motor fuels tax. Further, any attempt to refocus the Interstate program on nationally important routes would probably affect the states unevenly, given that many states have already completed construction of their Interstate routes.

Reduce the Federal Match. While federal funding of Interstate System repairs has increased significantly in recent years, a large portion of these funds is eligible for use by states not only for repairs but also for "reconstruction" projects. These are mostly locally oriented projects that do not entail repair of existing highways, but rather involve construction of routes dropped from the planned Interstate System and special types of new construction, such as added lanes and interchanges, that have considerably lower federal priority than repairing the existing system.

Under the present Interstate 4R program, states select their own combinations of repair and reconstruction projects, all of which are eligible for 90 percent federal funding. A significant reduction in the federal matching ratio for reconstruction projects--for example, to 50 percent or even 25 percent--would encourage states to channel more of their 4R funds into repair of existing Interstate routes. A 25 percent federal matching share would reduce federal obligations, and could increase states' financial burdens, by as much as $370 million in 1986.

Increase Highway Taxes. As mentioned above, the Administration's proposals to freeze obligations for 1986 and 1987 at the 1985 level would maintain solvency of the trust fund in the short term. One way to return the trust fund to long-term stability, however, would be to increase revenues. An increase in highway user fees equivalent to an additional tax of 2 cents per gallon ($2.3 billion a year) could bring outlays and revenues into rough balance over the next decade.[12]

Alternatively, a smaller increase in highway taxes could be combined with a reduction in existing tax exemptions, which benefit state and local governments, bus and taxi operators, and producers of gasohol. These tax subsidies cannot be justified on economic grounds because all vehicles, whether publicly or privately owned, cause wear and tear on the nation's roads. For example, the subsidy to gasohol producers, justified as contributing to the nation's energy independence, is large--equivalent to 60 cents per gallon of alcohol fuel--and appears excessive in light of gasohol's modest contribution to U.S. energy independence. These exemptions reduce trust fund income by more than $750 million a year. Ending these exemptions, however, would increase financial pressures on state and local governments and on mass transit operators already concerned over possible reductions in federal aid. Eliminating the federal subsidy to gasohol would harm existing producers who have made investments based on this subsidy.

New Toll Roads. Under current law, tolls are prohibited on highways constructed with federal assistance, although federal funds may be used under certain conditions for the construction of toll bridges and tunnels.[13] To allow states a wider choice of financing options for highway projects, existing federal law could be modified to permit federal participation in the construction of new toll roads under certain circumstances. The current exceptions could be expanded in a number of different ways to accomplish this objective. Federal assistance could be extended to all types of new toll highway projects, for example, or it could be made available only for certain high-cost components of a project, such as acquisition of right-of-way. Federal aid to new toll highway projects could be provided on a more limited basis than to nontoll federal projects--for instance, a 25 percent federal match for new highway projects on the Interstate System, instead of the present 90 percent match for Interstate construction. This approach would offer states a "mixed" financing alternative for highway projects that have the potential to be self-supporting toll facilities in the long run, but whose high up-front costs make them impossible to finance wholly out of toll revenues.[14] The goal would be to provide sufficient federal funding to facilitate a project's construction without undermining the stringency of the market test that toll projects currently must undergo by competing for capital in the municipal bond market. In addition, by lowering the level of federal spending for some projects that would otherwise be built with a high federal match, this approach could help relieve existing pressures on the Highway Trust Fund.

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[12] Alternatively, a higher levy could be imposed on heavy trucks, as this class of users now pays only two-thirds of the costs it occasions. To the extent that these taxes could be deducted as business taxes, federal receipts from the corporate income tax would be reduced. This loss (roughly $500 million) would not affect the Highway Trust Fund, however.

[13] See 23 *U.S. Code*, Sections 301 and 129.

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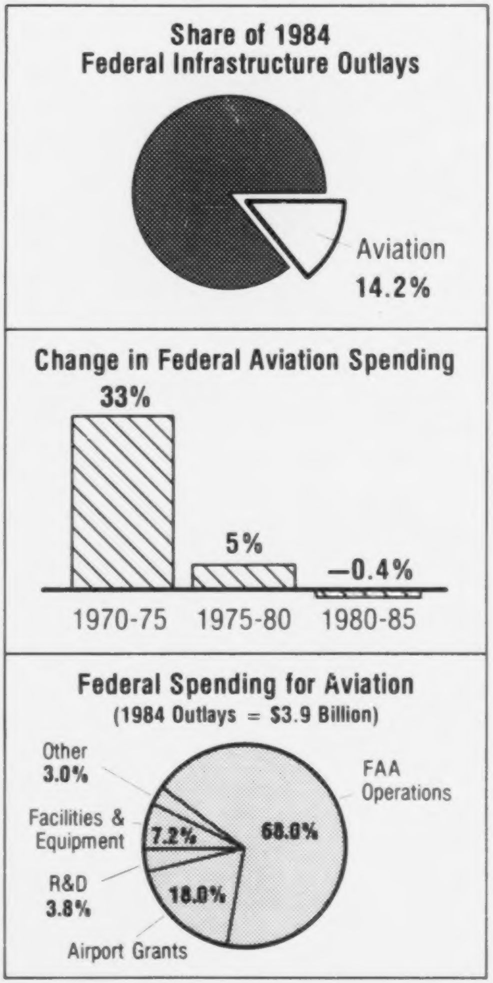
14. For further details, see forthcoming Congressional Budget Office study on options for toll financing of U.S. highways.

AVIATION



Share of 1984 Federal Infrastructure Outlays

Change in Federal Aviation Spending

Federal Spending for Aviation (1984 Outlays = $3.9 Billion)

Annual federal spending for aviation is slightly lower in 1985 than in 1980, after climbing 33% from 1970-1975 and another 5% between 1975 and 1980. In 1984, federal aviation spending represented 14% of total federal outlays for infrastructure, with 68% of these funds supporting FAA operations including administration.

The federal government, through the Federal Aviation Administration (FAA), equips, maintains, and operates the nation's air traffic control system and provides assistance to states and localities for the construction and rehabilitation of airport facilities. Federal capital investments in airports and air traffic control, together with a portion of the FAA's operating expenditures, are financed by user fees collected from passengers and aircraft operators and then deposited in the Airport and Airway Trust Fund.

DEVELOPMENT OF THE FEDERAL ROLE

Federal aid to aviation dates back to the 1920s, when Post Office contracts were used to encourage the fledgling commercial aviation industry. Federal acquisition of air traffic control centers from private and local operators began in the mid-1930s, with nationalization of major airport terminal control towers occurring in 1941. This system now includes nearly 900 towers and other facilities and more than 14,000 air traffic controllers. In 1946, believing that an adequate system of airports was a matter of national concern both for defense reasons and because of the rapid growth expected for civilian aviation, the Congress authorized a program of federal grants to help finance construction of airports.[1]

User taxes finance federal capital spending on airports and air traffic control as well as a portion of FAA operating expenditures. These taxes, which originated in 1933 and 1941, were not formally linked to expenditures until 1970, when the Airport and Airway Trust Fund was established. In 1985, about 87 percent of the tax receipts paid into this fund will be provided by an 8 percent tax on domestic passenger tickets. The balance is provided by a tax of 14 cents per gallon on general aviation (noncommercial) jet fuel (12 cents for gasoline) and taxes on freight waybills and international passenger departures.

Trends in Federal Spending

Air Traffic Control. Federal spending for air traffic control has fluctuated considerably over the past 25 years, with alternating periods of expansion and stabilization in the air traffic control system (see Figure 8). Federal spending accounts for virtually all of the nation's capital investment in air traffic control and support facilities. Although a few local airport authorities install their own navigational instruments, these account for a very minor share of total investment since 1960.

Following a period of declining investment in the mid- and late 1970s, when federal capital funds were concentrated on maintaining existing capacity, capital spending for air traffic control is increasing again, with outlays expected to continue rising as the FAA proceeds with implementation of its $11.4 billion National Airspace System Plan.[2] This capital modernization plan would consolidate facilities and reduce staff, thereby yielding operating and maintenance cost savings of about $17.5 billion

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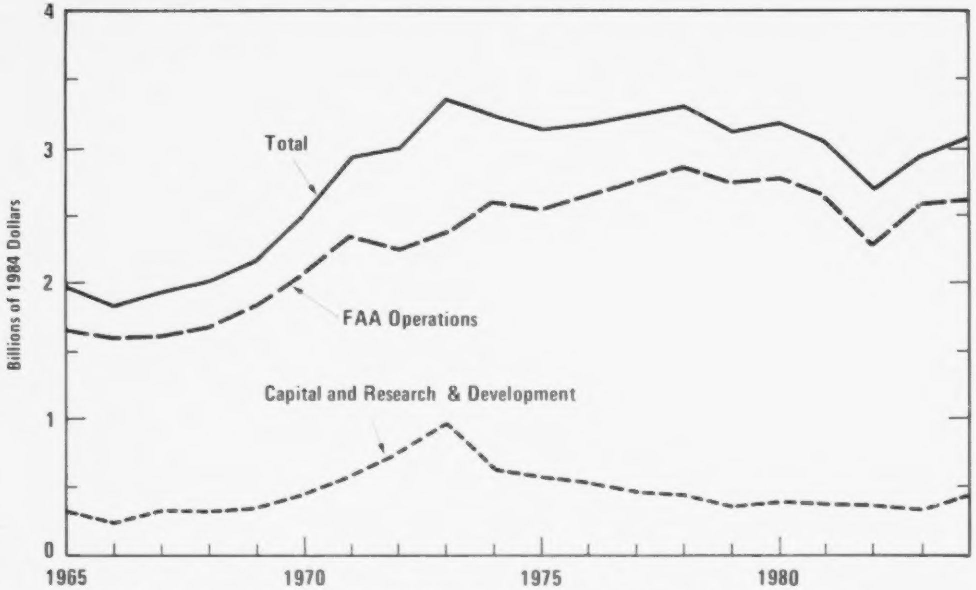
[1] See Congressional Budget Office, *Financing U.S. Airports in the 1980s* (April 1984). For a history of the air traffic control system, see John W. Fischer, "Federal Operation of the Air Traffic Control System: Background and Analysis," Congressional Research Service, November 1981.

[2] In updating the National Airspace System Plan in 1984, the FAA raised its estimate of costs for implementing the plan from its original projection of $10.7 billion (in 1982 dollars) to $11.4 billion (in 1984 dollars) over 10 years. See Department of Transportation, *National Airspace System Plan* (December 1981, updated April 1984), and the Office of Management and Budget, *Supplement to Special Analysis D* (February 11, 1985), p. II-10.

Figure 8.

Federal Spending for Air Traffic Control by Purpose, Fiscal Years 1965-1984



SOURCE: Congressional Budget Office, from data in *Budget of the United States Government.*

through the year 2000.[3] The success of the plan depends, however, on closing and consolidating many FAA facilities--something the Congress has been reluctant to do.

Operating costs for the FAA are also increasing again, after declining from the late 1970s through the period following the 1981 walkout by the Professional Air Traffic Control Union (see Figure 8). Following the walkout, the system was kept in operation with a reduced work force by administratively limiting air traffic at the nation's busiest airports. These controls have since been lifted at all airports except New York's Kennedy and LaGuardia, Chicago's O'Hare, and Washington's National.

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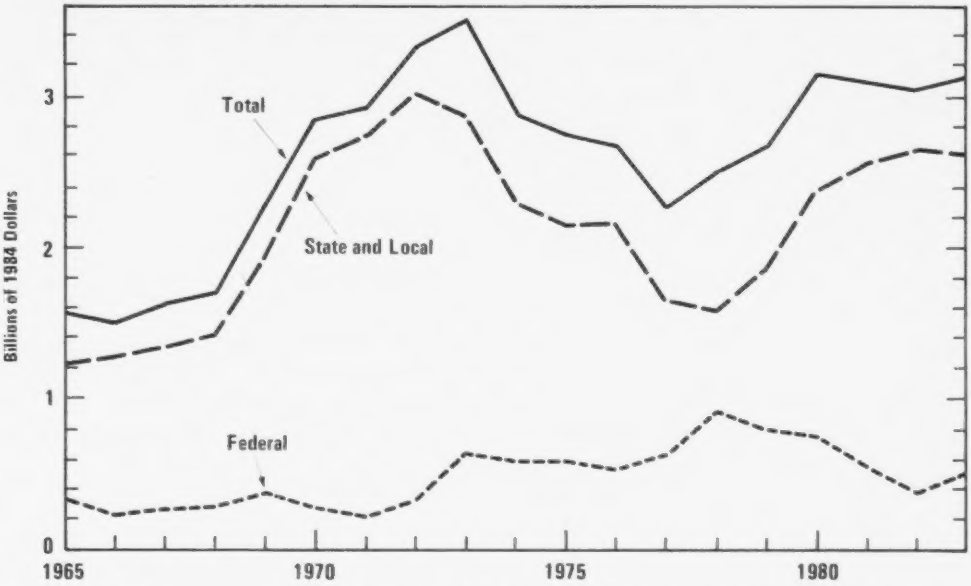
3. Originally estimated at $24 billion (in 1982 dollars), operating and maintenance cost savings are now expected by the FAA to total about $17.5 billion (in 1984 dollars) by the year 2000. For detailed analysis of the costs and benefits of the FAA plan, see Congressional Budget Office, *Improving the Air Traffic Control System: An Assessment of the National Airspace System Plan* (August 1983).

Figure 9.

Public Spending for Airports by Level of Government, Fiscal Years 1965-1983



SOURCE: Congressional Budget Office from data in *Budget of the United States Government*, and in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances*.

Airports. Since 1965, airport capital spending has shown considerable year-to-year variation, both in total spending and in the share represented by federal grants (see Figure 9). Shifts in total annual spending reflect the "lumpiness" and sporadic nature of airport capital investments and their sensitivity to changing conditions in the municipal bond market.[4] In general, large commercial airports rely predominantly on debt financing to raise investment capital; smaller airports, particularly general aviation facilities, tend to rely much more heavily on federal capital assistance.[5] Peaking in 1973 at $3.5 billion (in 1984 dollars), total public spending amounted to $3.1 billion in 1983, with federal aid representing 16 percent, or $500 million, of this sum.

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4. As interest rates increase, fewer projects are likely to appear economically feasible.

5. See Congressional Budget Office, *Financing U.S. Airports in the 1980s* (April 1984), pp. 5-8, 54-56.

Current Federal Policy

Current federal policy in aviation has three principal objectives: to continue operation of the nation's air traffic control system and related services; to modernize existing air traffic control equipment; and to provide assistance for airport capital improvements, particularly those that help to expand capacity.

Under current programs, the federal government spends about $4 billion annually for aviation facilities and services. In 1984, outlays totaled $3.9 billion, including $0.4 billion for modernizing the air traffic control system, $2.6 billion for FAA operations including administration, $0.7 billion for Airport Improvement Grants, and $50 million for Washington National and Dulles airports. In addition, in its final year of existence, the Civil Aeronautics Board (CAB) provided $42 million in subsidies to local air carriers to guarantee "essential air service" to small communities. Eighty-two percent of all federal aid to aviation, mostly for air traffic control, took the form of direct federal spending. The remaining 18 percent ($0.7 billion) was provided in matching grants for airport construction and rehabilitation.

About 60 percent of federal grants for airport improvement are distributed to airports according to a formula based on passenger volume, with the balance disbursed as discretionary grants to meet special needs. Although the distribution of projects varies from year to year, a majority of the spending typically supports projects intended to increase airport capacity, to rehabilitate or upgrade runways and other airport facilities, and to bring existing airports into compliance with federally mandated safety and noise standards.[6] Capacity can be increased either by direct investments in commercial airports or by improvements to FAA-designated "reliever" airports--general aviation airports that offer potential to reduce traffic congestion at nearby commercial airports. In 1984, federal obligations for airport grants totaled about $830 million. The largest share--$324 million--was provided to the 71 largest commercial airports, which account for 90 percent of total air passenger traffic. In addition, $185 million was

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6. The federal matching share on Airport Improvement Grants averages about 80 percent, but ranges from 50 percent for terminal buildings to 90 percent for general aviation airports and commercial airports handling less than 0.25 percent of commercial air passengers. The basic federal match for grants to large and medium-sized commercial airports is 75 percent. Noise-related projects are eligible to receive an 80 percent federal matching share, and airports in states with a high proportion of public lands may receive federal funds at a match as high as 94 percent.

provided to the 200 next largest commercial airports, $64 million for low-activity commercial airports, $151 million for general aviation airports, $103 million for reliever airports, and $6 million for system planning. 7/

While federal spending covers virtually all the costs of building and operating the nation's air traffic control system, federal assistance plays a much smaller role in total capital spending for airports. In the five years following federal deregulation of the airline industry (1978-1982), the federal government provided about 35 percent of combined federal-plus-private investment in airport capital development; the remaining 65 percent was raised through the tax-exempt municipal bond market. 8/ The relative importance of federal funding varies greatly, however, according to airport type and size. Over the 1978-1982 period, federal grants represented less than 20 percent of combined federal-plus-private investment at the nation's 24 largest commercial airports, and about 27 percent at medium-sized airports. By contrast, federal assistance dominated capital spending at smaller commercial, reliever, and general aviation airports, where it accounted for 69 percent, 80 percent, and 92 percent of combined federal-plus-private investment.

All federal capital spending is financed by aviation user fees deposited in the Airport and Airway Trust Fund. 9/ In recent years, a variable portion of FAA's operating costs also has been supported by the trust fund, ranging from 15 percent of budget authority in 1980 to 50 percent (41 percent of outlays) in 1983 to none in 1984. This variation stems largely from disagreements between the authorizing and appropriating committees over the proper level of funding for facilities and equipment for the air traffic

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7. Information provided by the Federal Aviation Administration, Office of Airport Planning and Programming, Grants-in-Aid Division.

8. Additional assistance was provided by state and local governments, particularly for the smaller commercial and general aviation airports. For further details, see Congressional Budget Office, *Financing U.S. Airports in the 1980s* (April 1984), pp. 51-56.

9. Exceptions are National and Dulles airports in Washington, D.C., which, though owned and operated by the federal government, are financed outside the trust fund, primarily through fees imposed directly on users.

control system.[10] Largely as a result of these differences, a sizable uncommitted surplus has accumulated in the Airport and Airway Trust Fund, amounting to approximately $2.2 billion at the start of fiscal year 1986.

BUDGET PROPOSALS FOR FISCAL YEAR 1986: ISSUES AND ALTERNATIVES

Major policy issues focus on the potential for improving the efficiency of current federal programs by reducing and retargeting federal capital grants to airports and by charging general aviation users their full share of federal aviation expenditures. The appropriate fee structure for aviation users is closely related to what is perhaps the major public policy issue for airports--the development of measures to help relieve congestion at the nation's largest airports. In another area, questions have arisen as to the potential cost effectiveness of certain components of the FAA's National Airspace System Plan, and a critical issue remains the timely consolidation of air traffic control and support facilities.

The Administration's Budget Proposals

While holding down spending somewhat, the Administration's budget proposals would do little to alter the overall federal aviation program. The one exception, however, is the proposal to restructure the airport grant program in 1988.

The changes for aviation proposed by the Administration are small relative to those for other infrastructure areas. Compared with current policy, outlays would decline by about 9 percent to $5 billion in 1988 (see Table 3). This would still be some $800 million above spending in 1985

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10. According to provisions enacted in the Airport and Airway Improvement Act of 1982, the amount of FAA operating expenditures financed by the trust fund in a given year is determined by the percentage of that year's authorizations for facilities and equipment and Airport Improvement Grants that is actually appropriated. For example, for each dollar that the appropriation for facilities and equipment is below the authorized amount, the amount of FAA operations that can be financed by user fees is to be reduced by two dollars. In 1984, these penalty provisions meant that no trust fund monies were appropriated to support FAA's spending for operations, even though adequate funds were available.

TABLE 3. FEDERAL SPENDING FOR AVIATION, FISCAL YEARS 1984-1988
(Outlays in millions of current dollars)

Program	1984	1985	1988 Current Policy	1988 Administration Proposal	1988 Senate Resolution	1988 House Resolution
Operations (and Administration)						
Trust Fund	257 a/	977	1,200	2,031	1,179	1,179
General Fund	2,384 b/	1,689 b/	1,718	742	1,687	1,687
Subtotal	2,641	2,666	2,918	2,773	2,866	2,866
Facilities and Equipment	278 c/	385 c/	1,233	1,088	1,088	1,210
Research, Engineering, and Development	146	213	204	154	154	204
D.C. Airports						
Operation	33	36	38	3	3	38
Construction	18	15	11	5	5	11
Subtotal	51	51	49	8	8	49
Airport Improvement Grants	694	797	1,038	959	959	1,011
Payments to Air Carriers	42	51	59	0	56	59
Total	3,852	4,163	5,501	4,982	5,131	5,399

SOURCE: Congressional Budget Office.

NOTE: Outlays for 1985 and 1988 are CBO estimates.

a. Largely because of penalty provisions enacted in the Surface Transportation Assistance Act of 1982, no trust fund monies were authorized for FAA operations in 1984. As a result, trust fund outlays for FAA operations in 1984 were uncharacteristically low.

b. Includes Civil Aeronautics Board administration outlays.

c. Includes outlays from the expired Facilities, Engineering and Development account.

because of the FAA's program to modernize air traffic control. The Administration's request includes spending of about $1.2 billion for facilities and equipment for this program for 1987 through 1990--on average, about 25 percent below CBO's estimates under current policy. Airport Improvement Grants would be funded at the full $1 billion level authorized for 1986. Beginning in 1988, however, this program would be cut in half by eliminating aid for larger airports. The Administration also has proposed terminating in 1986 the local subsidy program for air carriers, which was designed to guarantee essential air service to small communities. Also proposed is a mid-1987 transfer of Dulles and Washington National airports to an independent regional airport authority, an operating form typical of many large airports.

The Administration would increase to a fixed 75 percent the amount of FAA's operating expenditures to be supported by the trust fund. The remaining 25 percent of FAA operating costs would continue to be paid out of general revenues. In order to reduce the present surplus in the trust fund, interest earned on the cash balance would not be retained by the trust fund, but would be added to general federal revenues.

Neither the Senate nor the House budget resolution calls for significant changes in current federal aviation programs. By 1988, for example, the Senate resolution would cut spending by about 7 percent from the current policy baseline, while the House resolution would cut outlays by 2 percent. Thus, both call for slightly more spending than proposed by the Administration. Both would continue the local subsidy program for air carriers proposed for elimination by the Administration. Only the Senate, however, agrees with the Administration on the transfer of National and Dulles airports to a regional authority.

Reduce and Retarget Federal Airport Grants. The Administration has proposed reducing Airport Improvement Grants beginning in 1988, with a drop in funding from $1 billion to about $500 million a year. Although details of this plan have not been released, it appears that federal assistance to large and medium-sized commercial airports would be eliminated. It is unclear, however, how the remaining funds would be retargeted and whether the present federal tax on tickets would be reduced in line with the reduced spending (a lower ticket tax would offset any effect on the overall budget deficit).

The likeliest candidates for "defederalization" are the nation's 71 largest commercial airports, which receive about 40 percent ($324 million in 1984) of annual federal grant assistance. Collectively, these airports have demonstrated an ability to finance the bulk of their capital spending needs through conventional financing in the municipal bond market.[11] Forty-one of these airports used bond financing over the 1978-1982 period, and all of the rated bonds received "investment grade" ratings from one or both of the two major U.S. investment rating services.

Providing federal aid only to those airports that lack financial self-sufficiency--basically, small commercial, reliever, and general aviation airports--would encourage large and medium-sized airports to expand the use of cost-based pricing to offset the lost subsidy. Though not addressed by the Administration, such a change could also permit a reduction in the present 8 percent federal tax on commercial passenger tickets to about 7 percent. A more stringent alternative would be to restrict federal aid to airports of national significance--including reliever airports--that are in need of external support. By targeting federal assistance exclusively to small commercial and reliever airports, this measure could reduce annual federal spending by close to $500 million in 1986 and allow the present federal tax on tickets to drop to 6.5 percent. At the same time, the continued aid to reliever airports would help alleviate congestion at the nation's largest airports.

Alternative Strategies

Additional options would focus on ways to help relieve airport congestion, including landing fees at crowded airports and fees on users of general aviation designed to recover fully the costs they impose on the airport system. In addition, there are several actions that could be taken to ensure that the modernization of the air traffic control system proceeds in the most cost-effective manner.

Charge Aviation Users Their Full Share of Federal Costs. Aviation user fees--most important, the 8 percent tax on domestic passenger tickets and fuel taxes for private aircraft--currently recover the capital costs of building and equipping air traffic control facilities and fund federal grants for airport improvement. These revenues are not, however, adequate to cover the federal government's costs of operating the air traffic control system. Charging nonmilitary aviation users for their full share (estimated to be 85 percent) of the costs of operating this system would raise an additional $2.7 billion over the 1986-1990 period. While the President's proposal would increase the share of FAA operating costs supported by the aviation trust fund to a fixed 75 percent, it does not seek to alter the existing imbalance in the share of costs covered by different groups of aviation users.

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[11] For details, see Congressional Budget Office, *Financing U.S. Airports in the 1980s.* It is not clear whether airports were not in the bond market because they did not need additional funds or because they were not financially strong enough.

Under current policy, general aviation users--firms and individuals that own and operate aircraft for business or recreational use--pay only about one-tenth of their share of all federal aviation expenditures, while commercial aviation passengers overpay by about 20 percent.[12] If general aviation users' fees were increased in 1986 to cover approximately 40 percent of the costs they impose, increasing to 60 percent by 1990, the subsidy from the general taxpayer could be eliminated. If general aviation users' fees were raised to cover 100 percent of the costs they impose, and the tax on commercial air passenger tickets was adjusted downward (from 8.0 percent to about 6.5 percent), the present cross-subsidy from commercial to general aviation would be eliminated.

A closer match between user fees and federal costs would promote a more efficient use of existing airport and airspace capacity. To the extent that general aviation demand was reduced, the need for additional capacity at many airports would be delayed, permitting a more efficient plan for modernizing the air traffic control system, perhaps with fewer or less costly flight service stations and other general aviation services. Opponents of higher fees argue that general aviation users should not be forced to pay their full share of costs for an air traffic control system that was designed to meet the needs of large commercial jets. Further, they argue that the large cash balance in the Airport and Airway Trust Fund makes it unnecessary to raise user fees at this time. Increased fees for general aviation would also reduce sales by the manufacturers of general aviation aircraft.

Relieve Airport Congestion. About a dozen of the nation's largest commercial airports already experience severe congestion, and the number of airports affected by significant overcrowding is expected to double by the end of the decade. Various measures could help relieve this congestion, largely by encouraging more efficient use of existing airport and airspace capacity. For example, peak-hour landing fees could be imposed to reflect the high capital costs of congestion during periods of peak demand. Such "congestion pricing" could diminish or significantly delay the need for new airport capacity at many facilities by shifting traffic patterns, particularly by forcing many general aviation users either to pay the increased rates, to take advantage of less congested reliever airports, or to operate at less congested times. If travel patterns did not shift, increased fee collections could help finance the needed expansion. Although few U.S. airports impose peak-period fees today, such fees on general aviation users have resulted in a marked decline in takeoff and landing delays for all aircraft at two of the nation's busiest facilities--New York's LaGuardia and John F. Kennedy airports.[13]

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[12] Estimated by CBO based on FAA, *Financing the Airport and Airway System: Cost Allocation and Recovery*, Final Report, November 1978. See also Congressional Budget Office, *Charging for Federal Services* (December 1983), Chapter V.

In addition to the relief that such locally imposed fees might provide, the federal government could help reduce the demand for airspace capacity by raising fees for general aviation users to recover their full share of the federal costs of operating and maintaining the air traffic control system. A direct federal fee imposed on takeoff or landing would make the most explicit link between the fee charged each aircraft and the costs it imposes on the system. The success of a direct federal fee, however, hinges on several unresolved issues, including jurisdictional questions, the administrative costs of collecting such fees, and the capacity to identify air traffic control costs and allocate them accurately to individual users. The FAA's ongoing program to replace and modernize air traffic control equipment should ease these problems over the next decade by making it technically feasible to identify all users of the system and to allocate costs more precisely.

For the near term, encouraging the most efficient use of existing airport and airspace capacity also requires resolving the recent impasse concerning "slot" allocation at the four busiest U.S. airports--Chicago's O'Hare, New York's LaGuardia and John F. Kennedy, and Washington's National. At each of these four airports, air carrier and general aviation operations currently are limited by the FAA to a specified number of slots per hour. The airlines' scheduling committees have failed to resolve a situation in which there is greater demand for slots than there are slots available at each of the airports; the accommodation of new entrants is particularly a problem at LaGuardia and O'Hare. Rather than move to some form of administrative allocation of airspace, it may make sense to permit existing slots to be bought and sold by the airlines at those airports where severe overcrowding is already a problem. This would be similar in its effect to congestion fees and would encourage the most efficient use of existing space and avoid re-regulation of the airline industry. On the other hand, opponents of this concept charge that incumbent airlines selling slots for

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13. Boston's Logan and New Jersey's Newark airports also impose peak-period surcharges on general aviation aircraft. No U.S. airport currently imposes peak-hour charges on commercial airlines, however, and such charges are prevented in many cases by long-term contracts between airport managers and airlines. For further details, see Congressional Budget Office, *Financing U.S. Airports in the 1980s*, pp. 75-80.

cash would be receiving a "windfall," that larger carriers would have an advantage over smaller ones, and that service to small communities could suffer as purchasers of slots would favor high-density routes.

Streamline the National Airspace System Plan. Overall, the FAA's master plan to consolidate and upgrade the nation's air traffic control and support facilities appears cost effective, with a projected annual return on investment exceeding 20 percent. The plan is not uniformly strong, however, and questions might be raised about certain components of the plan, such as systemwide application of the Microwave Landing System.[14] Increasing private-sector competition for some services currently offered free-of-charge by the federal government, such as weather information for pilots, also raises questions concerning planned federal investments for upgrading such services. Scaling back the National Airspace System Plan to include only selective application of Microwave Landing Systems and to exclude investments in services that can be more efficiently provided by the private sector could result in substantial savings to the federal government over the 1986-1990 period. In its 1986 budget request, the Administration has requested no new funds for modernizing flight service stations or related facilities pending a study of the potential for private-sector provision of weather and other information services for pilots.

Most important, the cost effectiveness of the FAA's plan to modernize air traffic control hinges on the ability to consolidate control centers and flight service stations and to reduce staffing in a timely fashion.[15] To date, however, the Congress has permitted only one major facility consolidation to go forward, even though substantial savings could be realized from consolidation of many low-activity flight service stations prior to the achievement of full automation. Speeding up the consolidation process could result in significant federal savings from reduced operating costs and would help ensure the financial and economic success of the $11.4 billion National Airspace System Plan.

By contrast, protracted delays in implementing the planned facility consolidations and staff reductions could reduce federal savings and jeopardize the financial success of the FAA's plan. If, for example, the Administration's proposed freeze in funding for facilities and equipment through

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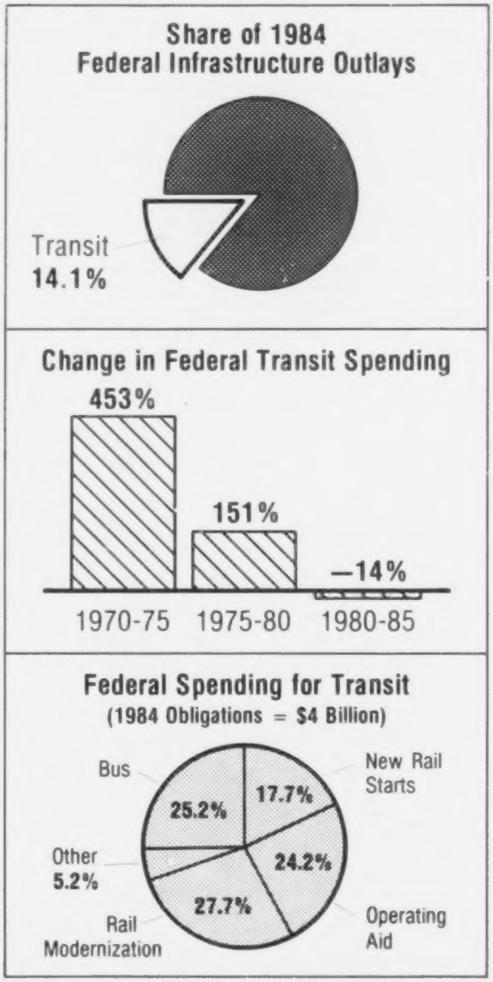
[14] The Microwave Landing System represents an improved way to handle takeoffs and landings during poor weather. For details, see Congressional Budget Office, *Improving the Air Traffic Control System: An Assessment of the National Airspace System Plan* (August 1983), pp. 29-31, 55-63.

[15] Congressional Budget Office, *Improving the Air Traffic Control System*, pp. 21-23, 35.

1990 caused significant delays in installing automated equipment, this could postpone achieving savings from those consolidations and staff reductions that are tied to automation. It is not clear, however, whether such lowered authorizations alone would significantly affect the rate of implementation, since to date the FAA's obligations for facilities and equipment have fallen well short of appropriated levels. The pace of spending is expected to quicken, however, as the modernization plan moves into a procurement phase.

CHAPTER IV

MASS TRANSIT



Annual federal funding for mass transit dropped 14% between 1980 and 1985, after climbing 453% from 1970-75 and 151% from 1975-80. Federal transit spending accounted for 14% of all federal infrastructure spending in 1984, with obligations divided fairly evenly among major categories of transit assistance.

The federal government provides grants to local transit authorities to help build and repair mass transit facilities, to buy buses and other equipment, and to pay part of the operating costs for transit systems. Administered mainly by the Urban Mass Transportation Administration (UMTA), these grants provide about 75 percent of total capital spending and 10 percent of total operating revenues for the nation's public transit systems.

DEVELOPMENT OF THE FEDERAL ROLE

Early in this century, mass transit was dominated by private firms that operated as profitable businesses, including subsidiaries of firms in related businesses, such as land developers and electric power companies. With the proliferation of private automobiles following World War II, urban populations and employment--once concentrated in city centers--became more dispersed. As a result, transit ridership declined by about 65 percent between 1945 and 1965, and many privately owned transit companies failed. By the early 1960s, the physical deterioration resulting from deferred maintenance had reached crisis proportions on most remaining private systems. [1]

As private investment in transit declined, federal funding began, though on a small scale, in 1963. The main purpose was to encourage modernization of equipment and services and planning for areawide services, both public and private. During the early 1970s, the capital program expanded dramatically, permitting greater use of funds for both existing and new rail systems. These funds were distributed widely, partly to encourage use of transit in small cities and in the newer, automobile-oriented cities and partly in recognition of the political problems associated with concentrating federal aid in those few cities (New York, Chicago, and Philadelphia) that account for most (more than 50 percent) transit use.

Trends in Federal Spending

Federal funding for transit capital aid rose from $30 million in 1965 to $2.7 billion in 1980 (in 1984 dollars), with growth continuing into the early 1980s (see Figure 10). Operating subsidies were added to the federal program in 1975, in response to the burden that the rapid growth in operating deficits placed on urban areas (see Figure 11). After peaking in 1980 at $1.5 billion (in 1984 dollars), federal operating assistance was limited to $875 million a year through 1986 by the Surface Transportation Assistance Act of 1982. This act also created a Mass Transit Account within the Highway Trust Fund, with financing provided by receipts ($1.15 billion per year) from 1 cent per gallon of the 9-cent-per-gallon federal tax on motor fuel. This provided transit with its own dedicated source of funds--a long-term goal of transit supporters. Appropriations from this account are limited in 1985 and 1986 to $1.1 billion annually. The 1982 act also reduced the federal match for discretionary capital grants from 80 percent to 75 percent (it had been increased from two-thirds to 80 percent in 1974), but no change was made in the 80 percent match for formula capital grants.

During the early to mid-1970s, federal transit spending grew at an average annual rate of 40 percent--the fastest growing component of federal aid to infrastructure. This growth, in turn, underlies the 425 percent real increase in total spending for transit by all levels of government since 1960. Since federal involvement began in 1963, the federal share of total capital spending for transit has climbed to about 75 percent, with state and local governments providing little more than the minimum funds required to

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1. See George W. Hilton, *Federal Transit Subsidies* (Washington, D.C.: American Enterprise Institute, 1974).

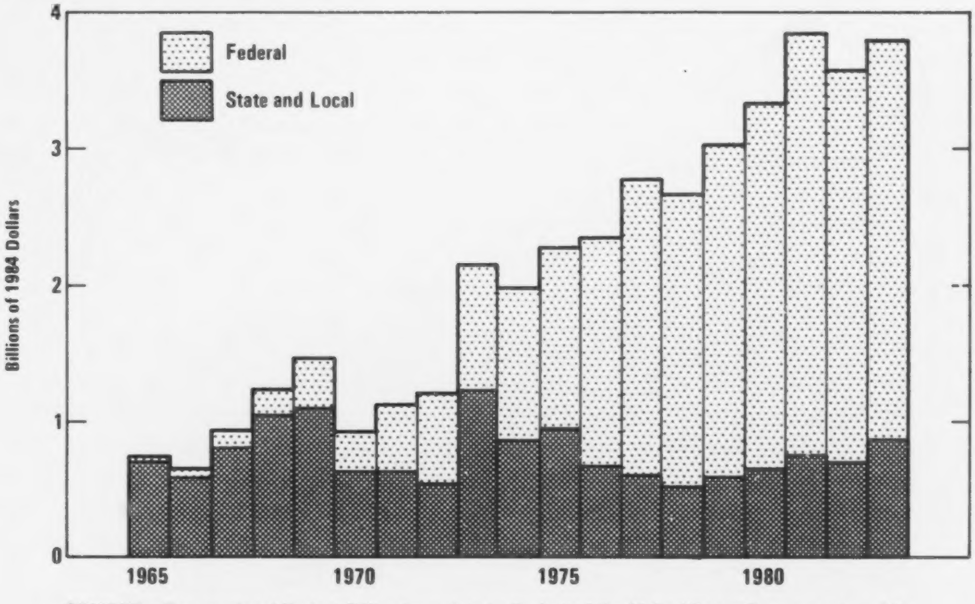
match federal grants. In addition, a few large cities (notably New York) have financed major investments with their own monies. Federal operating subsidies now represent about 10 percent of transit revenues nationwide, ranging up to 50 percent in many smaller cities and 5 percent or less in the largest cities.

Current Federal Policy

The current federal transit program aims to maintain the nation's transit rolling stock in good condition, expand the number of cities with rail transit systems, provide help to older cities with deteriorating rail transit systems, and provide operating assistance. The allocation of federal funds largely reflects the political realities of a program whose major constituents are concentrated in only a few cities. Although the older, more transit-dependent cities receive a substantial share of federal aid, transit grants account for a much larger share of the total transit spending of small and medium-

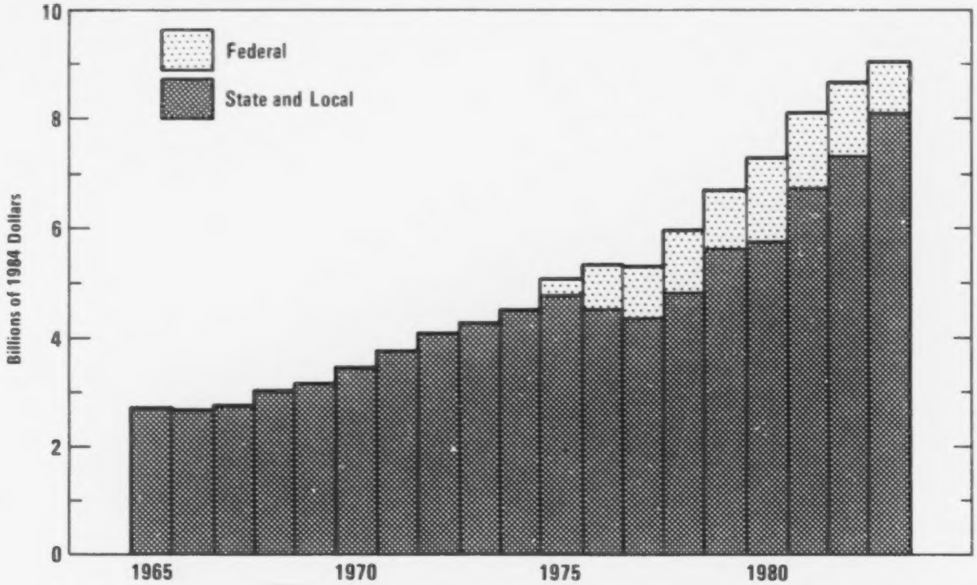
Figure 10.

Capital Spending for Mass Transit by Level of Government, Fiscal Years 1965-1983



SOURCE: Congressional Budget Office from data in *Budget of the United States Government,* and in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

Figure 11.
Spending for Mass Transit Operations by Level of Government, Fiscal Years 1965-1983



SOURCE: Congressional Budget Office from data in *Budget of the United States Government*, and in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

sized cities. Also, new rail systems are often financed at the expense of modernization projects that appear to be more cost effective.

Most federal funds (about 80 percent) are available for capital purposes only, with the balance used for operating assistance. Capital grants support new bus purchases, bus rehabilitation, and bus maintenance facilities; modernization of existing rail transit systems; extension of existing rail transit systems; and construction of new rail systems. The Urban Mass Transportation Administration provides two types of grants: discretionary grants for capital-intensive projects such as new rail systems and major expansions of bus capacity, and formula block grants for routine capital investments and operating assistance. Formula grants are apportioned among urban areas according to population, population density, and a measure of current transit use (vehicle-miles traveled). This formula represents a compromise between the political need for a way to distribute funds across many cities and the concentration of transit use in a small number of the largest cities. As a result, the share of federal formula grants received by cities with the greatest transit needs--New York, Chicago, and Philadelphia--is smaller than their share of transit use.

Capital funds are also provided through "Interstate substitution" grants for cities that have decided not to build specific segments of the Interstate Highway System.[2] A separate program of capital grants is dedicated to construction of the Washington, D.C., Metro.[3] A small (about $50 million) research and development program is also administered by UMTA.

Of the $3.9 billion in federal obligations for transit assistance in 1984, about one-fourth was used for operating aid, one-fourth for buses and related facilities, another one-fourth to modernize older rail systems, and 18 percent to build new rail transit systems. Cities may use operating assistance for capital projects as well, but in practice virtually all such aid is used to help cover operating costs. In 1983 and 1984, cities had the option of converting capital funds into operating grants on a three-for-two basis. Some $60.6 million of formula capital grants was thus replaced with $40.4 million in obligations for operating grants in 1984.

In contrast to most other federal infrastructure programs, almost all federal transit grants are made to local rather than state governments, and local public transit agencies are largely responsible for project selection and management. With the exception of some projects in a few large cities, almost every transit capital project uses federal aid. The federal government provides 75 percent to 85 percent of each project's cost, with the balance shared by state and local governments.[4] After receiving federal and state contributions, some cities pay 10 percent or less of a project's costs themselves.

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2. If the Federal Highway Administration agrees with a city's contention (submitted before the end of fiscal year 1983) that a certain planned Interstate route is not of national significance, the city has the option of using these funds, subject to appropriations, either for transit or other highway projects.

3. The Stark-Harris Act, passed in 1979, authorized $1.7 billion outside the Urban Mass Transportation Act to help complete Washington's planned 101-mile Metro rail system. In addition, the federal government earlier provided grants totaling $1 billion and a loan guarantee for $1 billion in transit revenue bonds.

4. The federal share is 75 percent for discretionary grants, 80 percent for formula capital grants, and 85 percent for Interstate substitution grants. The federal share may be less for some large projects, since they may be divided into a series of smaller projects, some of which may be financed without federal aid. The federal share for formula operating grants is 50 percent.

The Urban Mass Transportation Administration rates all discretionary and Interstate substitution grant proposals for new rail starts on measures of cost effectiveness and the level of local financial commitment and then ranks them according to a numerical index of project merit.[5] The ratings may be misleading, however, because cost effectiveness is measured relative to an alternative chosen by the local authority proposing the new project, and this base alternative need not be designed to maximize cost effectiveness. Further, the UMTA procedures for evaluating new rail starts disqualify projects that save costs but do not aim to increase ridership. In addition, UMTA usually accepts without criticism optimistic projections of ridership on new and untried systems.

The federal government provides about 75 percent of annual transit capital spending; state and local governments supply the remaining 25 percent. Very little federal aid reaches private transit operators, however, and since the early 1960s public ownership of transit fleets has increased from just over one-third to more than 90 percent. Indeed, in most cases federal dollars were used to help local authorities purchase private systems.

Since 1975, the proportion of transit revenues covered by fares from passengers has dropped from 54 percent to less than 40 percent. In 1983, fares from passengers (farebox revenues) represented approximately 37 percent of industrywide transit revenues, with state and local subsidies covering another 49 percent and the federal government contributing about 10 percent nationwide.[6] In general, farebox revenues represent a smaller fraction of total revenues for transit systems located in smaller cities.

BUDGET PROPOSALS FOR FISCAL YEAR 1986: ISSUES AND ALTERNATIVES

Most of the changes proposed for federal mass transit policy derive from differing views over the appropriate federal role in helping to provide what is basically a local service. Should the federal government continue to provide transit operating assistance? Should the current federal match for capital grants be reduced, forcing local governments to pay a higher share of costs? Related questions concern ways to improve the cost-effectiveness of the existing federal programs. Should federal aid for new rail systems be ended? How can federal aid help promote private participation in transit operations? How might allocation formulas be changed so that grants are better targeted?

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[5] Rankings based on these criteria, which were proposed by UMTA in May 1984, are advisory rather than binding. The Congress, which earmarks funds for specific systems, has requested UMTA to develop new criteria that might be more widely accepted, particularly by the transit community.

[6] In addition, nonoperating revenues, such as advertising and interest on cash, account for 4 percent of total revenues (preliminary data provided by the American Public Transit Association).

The Administration's Budget Proposals

The Administration has proposed to eliminate more than 60 percent of federal transit spending, including all operating assistance and one-half of capital aid (all discretionary capital grants and about one-third of formula capital grants would be eliminated). This reduction would represent a major realignment in federal policy (see Figure 12). The proposal would reduce federal authorizations for mass transit from about $4.2 billion in 1985 to $1.6 billion in 1986 and beyond--a 62 percent cut. Because funds for prior years' construction programs spend out slowly, however, outlays in 1986 would drop by less than 13 percent but by 1988 would have dropped by 36 percent--and by nearly 50 percent relative to CBO's projection of current policy (see Table 4).

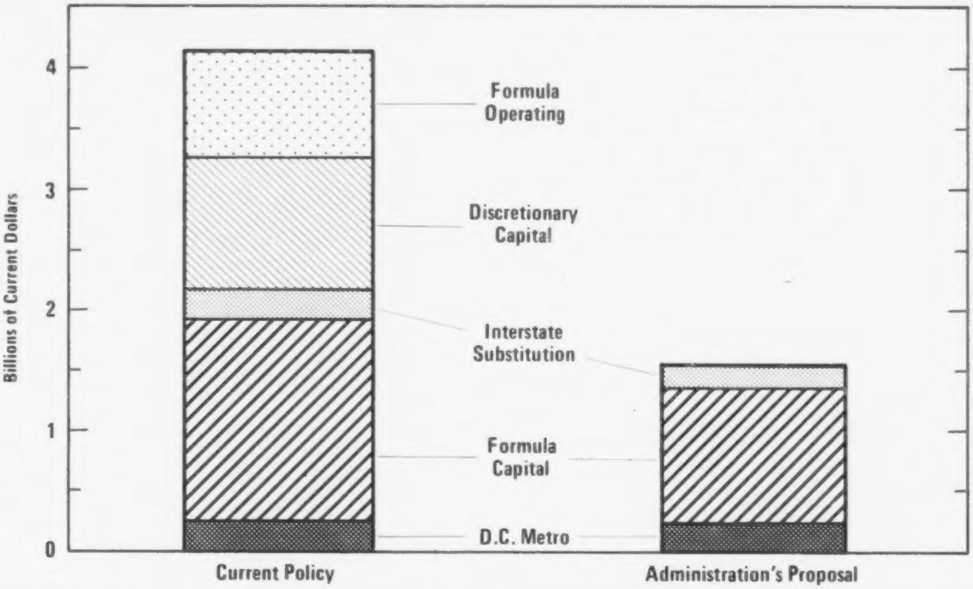
Both the House and Senate budget resolutions are closer to CBO's projection of current policy than they are to the Administration's proposal. Under the House resolution, for example, outlays in 1988 would increase 13 percent over 1985. Relative to current policy, the Senate resolution would lower capital spending by 18 percent to $2.7 billion; total federal transit spending would drop by 19 percent. This reduction would be accomplished through a 20 percent cut in operating aid (to $700 million) starting in 1986, while overall capital spending would be held at roughly the 1985 level.

The Administration would consolidate UMTA grant programs into a single capital formula grant program, to be funded by the Mass Transit Account of the Highway Trust Fund. Only the grants for construction of the Washington Metro would remain outside the trust fund. Capital grants would be distributed to urban areas based on existing bus and rail formulas, and the federal matching share would be lowered from 80 percent to 70 percent.

The Administration has stated its opposition to funding most new rail starts. The proposed level of funding would not permit federal assistance for new rail systems or for extensions of existing systems in any case. The Interstate substitution grant program would continue, but grants would be funded from the Highway Account of the Highway Trust Fund rather than from general revenues as at present.

Figure 12.

Federal Transit Grants for Fiscal Year 1986: Current Policy and the Administration's Proposal (In 1986 Budget Authority)



SOURCE: Congressional Budget Office and *Budget of the United States Government.*

Eliminate Federal Operating Assistance. The Administration has proposed ending all federal operating assistance for transit in 1986, on the grounds that mass transit operations are essentially of local rather than national interest, involving local decisions on wages, fares, routes, and levels of service. Thus, federal operating aid serves primarily as a means of redistributing income to urban areas. General operating subsidies, however, are not particularly well suited to reducing congestion or increasing transportation access for the disadvantaged--goals that are frequently cited to justify such subsidies. 7/ Moreover, recent studies have found that about 60 percent of governmental operating subsidies in the 1970s were absorbed by escalating labor and fuel costs and declining productivity, while only 40 percent benefited transit users through expanded service and fare reductions. 8/

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7. See Congressional Budget Office, *The Federal Government in a Federal System: Current Intergovernmental Programs and Options for Change* (August 1983), pp. 39-40, 50-51.

8. See Don H. Pickrell, *The Causes of Rising Transit Operating Deficits*, for Urban Mass Transportation Administration (July 1983).

TABLE 4. FEDERAL SPENDING FOR MASS TRANSIT, FISCAL YEARS 1984-1988

(Outlays in millions of current dollars)

Program	1984	1985	1988 Current Policy	1988 Administration Proposal	1988 Senate Resolution	1988 House Resolution
Discretionary Capital Grants a/	1,650	1,387	1,140	559	1,126	1,140
Formula Grants						
Capital	602	811	1,633	1,373	1,214	1,596
Operating b/	793	875	875	0	700	875
Subtotal	1,395	1,686	2,508	1,373 c/	1,914	2,471
Interstate Substitution Grants	591	483	291 d/	170 d/	170 d/	286 d/
Washington, D.C. Metro Construction	64	111	261	253	224	256
Washington Metropolitan Area Transit Authority (Federal share of bonds)	33	52	52	52	52	52
Other e/	80	73	93	38	70	90
Total	3,813	3,792	4,345	2,445	3,524	4,295

SOURCE: Congressional Budget Office.

NOTE: Outlays for 1985 and 1988 are CBO estimates.

a. Includes spending for expired Section 3 discretionary appropriations as well as discretionary capital grants now financed from the Mass Transit Account of the Highway Trust Fund.

b. Subject to annual obligation ceilings of $875 million through 1986. The Administration proposal would terminate operating assistance in 1986.

c. To be funded by the Mass Transit Account of the Highway Trust Fund.

d. This is an estimate based on the percentage of Interstate Transfer funds used for transit projects in the recent past. Beginning in 1986, such grants would be funded by the Highway Trust Fund.

e. Includes UMTA administrative expenses, research, training, and human resources.

Federal operating assistance grants now cover about $900 million in operating costs annually. This is equivalent to roughly 10 percent of total transit revenues, but the subsidies are not distributed evenly across all transit companies (see Table 5). Seventy percent of transit companies (mostly private and small public operators) receive no federal operating assistance, and another 35 systems (typically, large systems in older cities) receive on average only 6 percent of their revenue from federal sources. Three-quarters of federal assistance is awarded to only about 280 transit operators, and for nearly half of them it amounts to at least one-third of their revenues.

Eliminating federal operating assistance would, therefore, have uneven effects across cities. Those receiving no subsidy now would be unaffected; for transit operators in the larger older cities, loss of federal operating funds would reduce revenue by about 5 percent to 10 percent. Where federal operating assistance has been more substantial, however, elimination of the subsidy would require some combination of:

TABLE 5. FEDERAL OPERATING ASSISTANCE AS A PERCENTAGE OF TRANSIT SYSTEM REVENUES, FISCAL YEAR 1982

Federal Subsidies as Percentage of Transit System Revenues	Transit Systems	
	Number	Percent
0	718	69.4
1 to 5	9	0.9
6 to 10	26	2.5
11 to 20	38	3.7
21 to 32	117	11.3
33 to 50	117	11.3
More than 50	9	0.9
Total	1,034	100.0

SOURCE: Congressional Budget Office, from Urban Mass Transportation Administration, Section 15 Reporting Statistics for 1982. Total for all transit systems in 1982 furnished by the American Public Transit Association.

- Service cutbacks--for example, on lightly patronized routes and late-night services;
- Increased state or local aid;
- Fare increases;
- Productivity improvements through revised work procedures, manning schedules, and other operational practices; and
- Restructuring operations, to take advantage of the lower cost of small rather than large fleets and to introduce innovative solutions including shared taxis and vanpools where they are cost effective for special service needs.

For many systems, productivity improvements and other cost-cutting measures could completely offset the withdrawal of federal operating subsidies. The very wide range of costs reported to UMTA by transit agencies for comparable operations indicates that cost savings on the order of 30 percent to 50 percent are possible for many systems even if performance is only brought up to the national average.[9] At the other extreme, some agencies would have difficulty paring their operations. If the financial burden were borne entirely through the farebox--that is, if there were no cost savings, no service reductions, and no increased state or local aid--the average transit fare would have to increase by about 30 percent. For larger cities the increase might be 10 percent to 20 percent, while in smaller cities it could easily exceed 50 percent.

Eliminate Aid for New Rail Starts. The Administration's proposal would eliminate federal funding of new rail transit systems. Given the patterns of land use and density, of urban development in U.S. cities, new construction of rail systems is rarely cost effective in improving urban mobility or reducing congestion. Such investments are usually undertaken by cities wishing to capture certain commercial development opportunities or for prestige. In most cases, equivalent improvements in traffic circulation, noise, and pollution could be achieved by combinations of less costly investments in road and transit systems as well as changes in traffic management and transit operations.

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[9] Calculation based on data in Transportation Systems Center, *National Urban Mass Transportation Statistics* (December 1984).

The Administration's proposal to eliminate discretionary grants for new rail systems would oblige localities to consider priorities between the potential commercial development gains promised by new systems and needed improvements in existing transit systems, since both types of projects would compete for federal formula grant funds. Further, since formula allocations are generally not large enough to finance these "lumpy" investments, a much larger share of investment funds would have to come from private or nonfederal public sources. As a result, communities would have to appraise more critically the financial prospects of the rail system and the potential for increasing property values and creating jobs. Many of the new starts currently proposed would probably fail such a reappraisal, and would likely be supplanted by more cost-effective projects.

Alternative Strategies

The options discussed here represent a mix of ideas, including extensions of Administration proposals (as with a reduced federal match) and strategies that could result in a more cost-effective transit program.

Reduce the Federal Match. In addition to proposing $1.4 billion in cuts for transit capital grants, the Administration would lower the federal match to 70 percent. A case can be made, however, for an even more stringent reduction. The high federal match for capital grants means that, for most urban areas, the availability of federal funds strongly influences local transit priorities. For example, UMTA guidelines permit the replacement of all buses that are 12 or more years old at an 80 percent federal match. In contrast, federal funds may be used to rehabilitate no more than one-fifth of a transit authority's bus fleet. Thus, local authorities have an incentive to buy new equipment even though, if all costs are considered, rehabilitating older buses and keeping them in service longer may be more cost effective. Transit agencies are also encouraged to invest in their own service facilities, even when contracting privately would be more economical.

With the federal matching share currently 75 percent on discretionary grants and 80 percent on formula capital grants, the Administration's proposal would require an increase of 20 percent to 50 percent in local spending, depending on whether a locality's current share is 25 percent or 20 percent. More stringent reduction to 50 percent would double the local share for discretionary projects and increase it two-and-a-half times (from 20 percent to 50 percent) on capital formula grants. If this change were combined with a relaxation of federal regulations regarding how the money was to be spent, localities would be encouraged to commit funds only to projects they really need and to make better decisions as to the tradeoffs between such diverse strategies as purchasing more up-to-date capital equipment, improving service, and reducing fares. As a result, localities would be encouraged to serve basic objectives such as cost effectiveness in moving large numbers of people, rather than to build projects made attractive only by generous federal funding.

At current spending levels, changing the federal match on discretionary and formula capital grants to 50 percent would reduce budget authority for federal transit aid by nearly $1 billion in 1986 and by $1.1 billion in 1988. (An additional $200 million could be saved if Interstate substitution grants and Washington Metro grants were matched at a 50 percent ratio.) In fact, a much greater reduction might be realized, since the increase in the nonfederal share would probably stimulate serious reevaluation of many projects and redesign or cancellation of some. The Administration's proposed change to a 70 percent match alone could reduce federal spending by close to $300 million in 1986.

Promote Private Participation in Transit. Since its beginnings in the early sixties, federal transit aid has de facto promoted the growth of the public sector in transit at the expense of private firms. Ailing private firms were not given the same access to federal capital grants for modernization as public authorities; rather, federal funds were used to "municipalize" the industry through mergers and takeovers. Nevertheless, there are few general arguments favoring public operation of transit systems and only small economies of scale favoring large rather than small firms.[10] In fact, the limited data on transit performance being collected under UMTA's Section 15 reporting system shows that large transit operators have somewhat higher unit costs than smaller ones.

Increasing competition in the industry to stimulate cost savings could be effective in reducing national subsidy costs, in addition to the substantial (30 percent to 50 percent) cost savings possible from improvements in productivity. Federal programs could promote this competition by ensuring equal access to capital assistance for both public and private firms wishing to operate transit routes. This could be done in several ways. Formula grants, for example, could also be made available to cities to promote private transit firms; or federal funds could be used to establish a revolving fund for loans to both public and private transit firms for capital improvements, with loan applications judged solely on the credit-worthiness of the applicants.[11] Initially, at least, participation by states and localities in such a program would probably vary widely because of the extent to which local regulations limit competition with public operators and control fares.

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[10] N. Lee and I. Steadman, "Economies of Scale in Bus Transport," *Journal of Transport Economics and Policy*, vol. 4, no. 1 (1970).

[11] For a technical discussion of infrastructure revolving funds, see Congressional Budget Office, "Infrastructure Revolving Funds: A First Review," Staff Working Paper (May 1985).

Redesign Grant Allocation Formulas. Redesigning the formulas by which more than half of federal transit assistance is distributed could improve the targeting of the federal program. Mass transit is used principally for journeys to work and is particularly important in providing access to the centers of large metropolitan areas. The federal program of transit assistance has focused on big cities, with 10 urban areas accounting for more than 70 percent of the funding over the 1964-1980 period. Even so, the very largest cities have not received funds in proportion to their shares of the nation's transit riders. 12/ This dispersion of federal spending apparently reflects a desire to encourage transit growth elsewhere in the nation and a belief that the largest cities are better able to finance transit on their own. As a result, projects that benefit the largest numbers of users are not always funded. 13/

Although recent revision of the formulas by which UMTA's capital formula grants are distributed has improved the targeting of federal dollars, the formulas could be further modified to reward efficiency and to channel resources to areas where ridership is greatest. 14/ The bus formula, for example, was modified in 1982 to include the vehicle-miles traveled by buses as well as population size and density, and a small efficiency factor based on passenger-miles (total miles traveled by all passengers) per dollar of cost. A revised formula based on number of passengers or passenger-miles and giving greater weight to transit efficiency could allow federal grants to be distributed in proportion to more direct measures of transit demand and could improve the efficiency of transit investments. If all federal aid were distributed through a formula grant program as proposed by the Administration, the design of the formulas by which grant monies are distributed would be even more critical.

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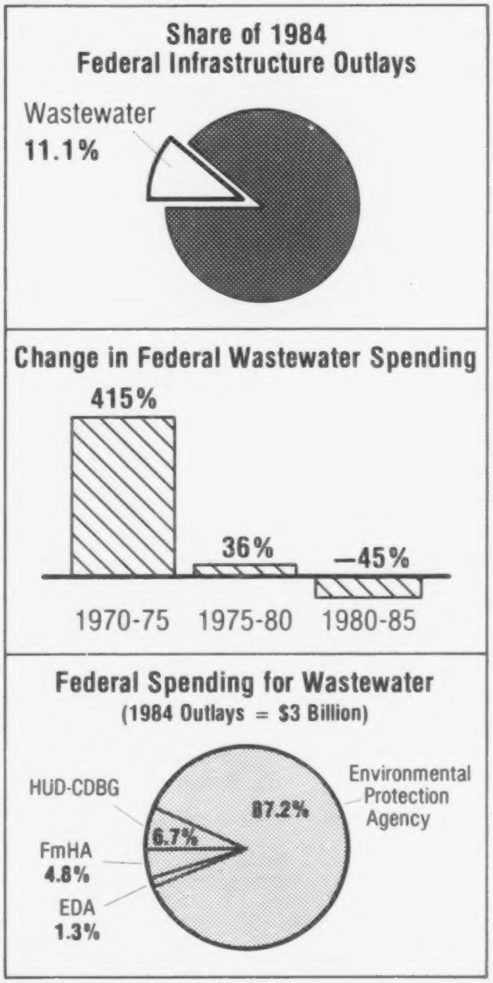
12. See Congressional Budget Office, *Public Works Infrastructure*, pp. 44-45.

13. The federally financed Technology Sharing program has helped to develop numerous innovative substitutes to conventional and specialized transit operations that reduce costs or improve services. Transit capital and operating support is available to implement these innovations, but only at the same priority as for projects to which they have been shown superior. In numerous cases, beneficial experiments have been discontinued for lack of funds. Thus, federal funding has tended to support the status quo in transit technology rather than to seek the most efficient means of providing transit services.

14. For a preliminary calculation of each urban area's allocation under several alternative formulas, see Congressional Budget Office analysis in Oversight Committee of House Committee on Public Works and Transportation, *Oversight of the Federal Public Transportation Assistance Program* (May 1982), Appendix B, pp. 33-40.

CHAPTER V

WASTEWATER TREATMENT



Share of 1984 Federal Infrastructure Outlays

Change in Federal Wastewater Spending

Federal Spending for Wastewater (1984 Outlays = $3 Billion)

Federal funding of wastewater treatment is 45% lower in 1985 than in 1980. Federal wastewater spending grew 415% from 1970-1975, and 36% from 1975-1980. In 1984, 11% of total federal infrastructure spending was devoted to wastewater treatment, with EPA construction grants accounting for 87% of federal funding in this area.

Since the Environmental Protection Agency's Construction Grants program expires this year, the principal policy issue facing the Congress is whether continued federal support of local wastewater treatment facilities will result in efficient attainment of clean water goals. The current program started in 1972 with $18 billion in grants authorized over three years, and was intended to eliminate a backlog of treatment needs and stimulate construction of local facilities. Since 1972, only half the treatment facilities originally thought necessary to attain clean water have been built, even after midcourse adjustments to promote more efficient spending and 14 years of federal grants totaling about $52 billion (1984 dollars). Localities currently receive federal grants for 55 percent of construction costs. Continuing this policy may perpetuate the federal role in a program that falls short of meeting the agency's estimate of the remaining needs for facilities.

DEVELOPMENT OF THE FEDERAL ROLE

Federal support for construction of municipal wastewater treatment facilities now totals $3 billion a year. This involvement began in 1957 under the U.S. Public Health Service with about $40 million a year in federal grants that covered up to 30 percent of local construction costs. The program was transferred to the Department of the Interior in 1966, and then to the Environmental Protection Agency (EPA) in 1970. In the 1960s, a relatively small federal program ($100 million to $200 million a year) helped localities with grants for 50 percent of the cost of building treatment facilities. As public awareness and concern over water pollution escalated, federal spending for wastewater treatment rose dramatically.

The rationale for federal involvement in local wastewater treatment derives from the public nature of clean water. A community that bears the responsibility and cost for resolving its immediate water quality problems will also extend the benefits of clean water to downstream communities that did not pay for it. Thus, left to themselves, communities tend to spend less than the overall benefits would merit. But untreated or improperly treated wastewater also imposes costs on the downstream communities toward which it flows. Federal intervention, it was argued, would therefore be necessary to ensure the proper level of investment from the national point of view. This intervention took the form of regulations as well as financial aid.

The 1972 Amendments to the Federal Water Pollution Control Act, now called the Clean Water Act, required that all publicly owned wastewater facilities meet minimum standards of secondary wastewater treatment in order to render navigable waters "fishable and swimmable" by 1983.[1] To meet this goal, communities generally had to build new facilities. Federal assistance was provided to relieve the resulting financial burden on localities. The 1972 legislation authorized $18 billion for the first three years of construction grants and increased the federal share of costs from 50 percent to 75 percent.

Trends in Federal Spending

The Environmental Protection Agency has remained the major source of federal funding for wastewater treatment, accounting for about 87 percent of the total spending by all federal agencies. Grants from the EPA grew from about $1.8 billion a year in 1973 to a peak of about $6.0 billion in 1977.

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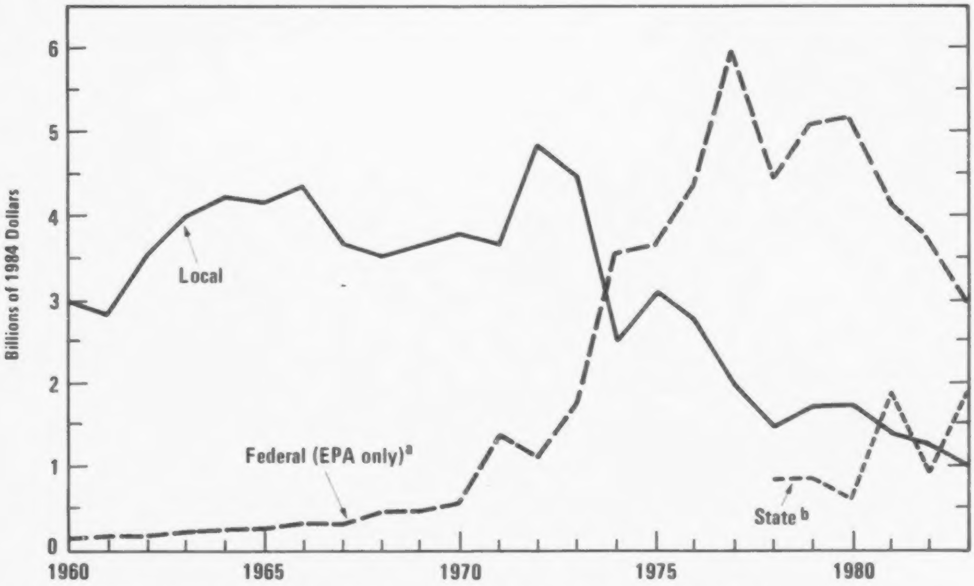
[1] Secondary treatment normally entails removing 85 percent of solid matter and organic oxygen-demanding substances from domestic sewage, as well as chemically disinfecting sewage prior to discharge.

Since that time, EPA grant outlays have fallen to $2.6 billion in 1984. The Farmers Home Administration (FmHA), the Department of Housing and Urban Development (HUD), and the Economic Development Administration (EDA) also have relatively small wastewater loan and grant programs. (These programs, which fund both water and sewer projects, are described in more detail in Chapter VII.) Combined FmHA, HUD, and EDA spending for local wastewater treatment rose from $352 million in 1974 (the first year of HUD grants) to a peak of $1.3 billion in 1977, and has slowly dropped since then to about $400 million in 1984.

In response to the sudden increase in federal aid beginning in 1972, local capital spending declined; local capital expenditures for wastewater treatment fell by 70 percent, from over $4.8 billion in 1972 to about $1.5 billion in 1978 (see Figure 13). But while local capital spending declined

Figure 13.

Capital Spending for Wastewater Treatment by Level of Government, Fiscal Years 1960-1983



SOURCE: Congressional Budget Office from data in *Historical Tables, Budget of the United States Government*, and in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances*.

[a] Excludes spending by Department of Housing and Urban Development, Farmers Home Administration, and Economic Development Administration.

[b] Data for spending on wastewater treatment by states before fiscal year 1978 are not available.

over this period, total local spending on wastewater treatment increased primarily as a result of rapidly rising operating expenditures (see Figure 14). Local annual operating outlays, for example, almost doubled from $3.0 billion in 1977 to $5.6 billion in 1983.

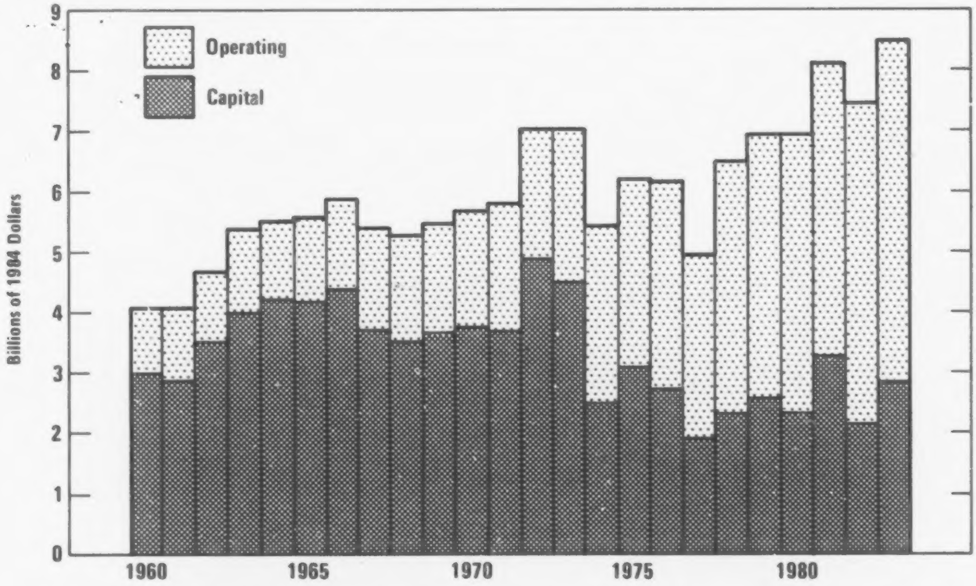
In 1978--a year when federal funding authorizations fell by 25 percent to $4.4 billion--local governments received capital grant assistance from states in the amount of $0.8 billion. Today, about 40 states offer grant or loan programs to help municipalities meet the local matching share required on federal grants for wastewater facilities. In 1983, state aid totaled about $1.8 billion.

Current Federal Policy

Construction grants from the Environmental Protection Agency are allocated to states on the basis of population and EPA-assessed needs. States, in

Figure 14.

State and Local Spending for Wastewater Treatment by Purpose, Fiscal Years 1960-1983



SOURCE: Congressional Budget Office from data in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

turn, distribute the funds to localities as project grants. These monies reimburse local governments for a share of the costs of building or improving publicly owned treatment works. Operation and maintenance expenses are the responsibility of local recipients. Localities are chosen to receive federal grants on the basis of a priority list of local projects maintained by each state. States determine their own selection criteria, ranging from the severity of problems with local water quality to per capita income. Before 1985, the EPA paid 75 percent of the capital costs for systems using conventional technologies and 85 percent for those with innovative technologies. 2/ In response to concern over the proper mix of federal and nonfederal involvement, legislation passed in 1981 lowered the federal match beginning in 1985 to a 55 percent share for conventional technologies and 75 percent for innovative ones. Authorizations were lowered from the $4 billion to $6 billion range of past years to $2.4 billion a year in 1982 through 1985.

The EPA conducts "needs" surveys every two years to assess the remaining cost to construct publicly owned treatment works or to upgrade them to secondary levels. Needs that qualify for federal grants are termed "eligible needs." Those that are required to achieve clean water but that do not qualify for federal grants are termed "ineligible needs." In 1984, the EPA estimated that the $53.1 billion in outstanding eligible needs would require about $36 billion in federal outlays and about $17 billion in local outlays by the year 2000. 3/ Statistical evidence indicates, however, that local fiscal discipline plus site-specific opportunities could reduce needs for secondary treatment plants by an average of 30 percent once the 55 percent federal share takes full effect (after about 1990). These untapped efficiencies--more careful choice of technologies and rigorous cost oversight, for example--would likely occur because local agencies will have greater incentives to control spending when their share of project costs is increased to 45 percent from the current 25 percent. If current policy and the $2.4 billion-a-year federal appropriation were extended beyond 1985, eligible needs could likely be met between 1997 and 2001. 4/

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2. Innovative technologies are new processes, not yet widely accepted in practice, that achieve the required sewage treatment levels at lower costs than conventional technologies.

3. Environmental Protection Agency, *1984 Needs Survey Report to Congress*, Office of Municipal Pollution Control (February 1985).

4. For additional details regarding the efficiency of wastewater treatment investments and federal, state, and local options to meet future needs, see Congressional Budget Office, *Efficient Investments in Wastewater Treatment Plants* (June 1985).

State and local governments, however, would bear the sole responsibility for meeting what the EPA estimates as another $56 billion of "ineligible" needs between now and 2001. These so-called "ineligible" needs include collectors (or large sewers), sewer overflow problems (from combined storm and sanitary sewer systems), and needs of future populations. Based on current state and local spending levels, only a small portion of these "ineligible needs" could likely be met by direct spending. Thus, the nation's goals for clean water might be placed in jeopardy unless state and local governments could implement more cost-effective solutions than those contemplated by the EPA.

BUDGET PROPOSALS FOR FISCAL YEAR 1986: ISSUES AND ALTERNATIVES

The principal policy issue in wastewater treatment is whether continued federal involvement in the EPA's Construction Grants program will result in more rapid and efficient attainment of national goals for clean water. Thus, policy options include phasing out federal grants (the approach taken by the Administration in its 1986 budget proposal); replacing federal grants with federally capitalized revolving loan funds, to be administered by the states; or continuing current policy but making several types of regulatory reforms.

The Administration's Budget Proposal

The Administration's budget proposal calls for a freeze in EPA construction grants at $2.4 billion in 1986, followed by a three-year phaseout of the grants program. Authorizations would be reduced to $1.8 billion in 1987, $1.2 billion in 1988, and $0.6 billion in 1989. By 1988, outlays would be 12 percent below current policy (see Table 6), with more dramatic decreases in later years. Federal grants through 1989 would be limited to completion of projects currently under way; in 1990 and thereafter, localities would be expected to pay all costs of building new facilities and expanding existing ones to meet the needs of growing populations. If federal aid were eliminated after 1990, remaining capital "needs" as estimated by EPA would total $92 billion. The Administration suggests that needs for construction capital could be met by increased state aid and additional local borrowing in the bond market.

As with the Administration's proposed budget, legislative proposals in both the Senate and the House call for phasing out the existing EPA Construction Grants program. They differ, however, in the time over which this phaseout would occur and in the financial mechanism that would replace the grants program. The Administration would eliminate the EPA Construction Grants program by 1990, suggesting that EPA's program be replaced with state aid and increased local borrowing. Both the Senate bill (S. 1128) and the House bill (H.R. 8) would eliminate grants one year later, in 1991. Federal spending would not end then, however. Rather, both bills would replace the current grants program with an interim system of block grants

TABLE 6. FEDERAL SPENDING FOR WASTEWATER TREATMENT, FISCAL YEARS 1984-1988
(Outlays in millions of current dollars)

			1988			
Program	1984	1985	Current Policy	Administration Proposal	Senate Resolution	House Resolution
Environmental Protection Agency Construction Grants	2,623	2,742	2,359	2,229	2,319	2,320
HUD Community Development Block Grants	200	204	185	169	169	168
FmHA Rural Waste Disposal						
Grants	36	80	66	46	66	65
Loans	108	106	138	68	134	134
Economic Development Administration Grants	40	14	20	0	0	18
Total	3,007	3,146	2,768	2,512	2,688	2,705

SOURCE: Congressional Budget Office.

NOTE: Outlays for 1985 and 1988 are CBO estimates.

to enable states to set up revolving funds to make loans for wastewater treatment facilities. Federal aid, together with state matching funds (15 percent in the Senate bill and 20 percent in the House proposal) would be used as seed money for these state-run revolving funds (see discussion of this financing mechanism, below). Because this transition period would be delayed until the early 1990s, both the Senate and House proposals are very similar to current policy for the next few years. While the Administration would limit future authorizations to $6 billion, however, the Senate and House proposals call for total authorizations (grants plus seed money for revolving funds) through 1994 of $18 billion and $21 billion, respectively.

Withdrawal of federal aid might be appropriate for three reasons. First, the Congress originally intended federal aid for wastewater treatment to be short-lived. The federal mandate for secondary wastewater treatment was not made conditional on the receipt of federal aid; rather, construction grants were offered only to encourage local acceptance of the mandate and to provide an incentive for eventual state and local dominance in a more ambitious construction program than nonfederal governments had previously undertaken. As the 1986 budget proposal suggests, federal withdrawal of funds would cause localities to explore alternative financing mechanisms more vigorously. Private financing, ownership, and operation of treatment facilities, for example, as well as greater reliance on the municipal bond market, could help some communities meet their capital needs. Enhanced state assistance in the form of bond banks, marketing assistance, or grant and loan programs would also be promoted.

Second, after 14 years of building municipal wastewater treatment plants, it has become clear that other sources of pollutants may be contaminating waterways to a greater extent than first envisioned. Nonpoint sources--runoff from farmland, feedlots, or urban areas--are now thought to contribute 50 percent or more of the total pollution in U.S. lakes and rivers.[5] Thirty-seven states report that they will be unable to meet the "fishable and swimmable" goals of the Clean Water Act because of uncontrolled nonpoint-source problems.[6] Nonpoint-source pollution may so degrade water quality in some rivers that additional investments in municipal treatment plants would not result in substantially cleaner water. From

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5. See Congressional Research Service, *Water Quality: Implementing the Clean Water Act*, Issue Brief IB83030 (August 1983).

6. See Council on Environmental Quality, *Environmental Quality 1981, the 12th Annual Report of the Council on Environmental Quality* (1981).

the perspective of efficiency, programs to control nonpoint sources should compete with municipal plants for federal aid, with funds allocated strictly according to anticipated improvements in water quality. [7]

Finally, although municipal enforcement powers under the Clean Water Act have been invoked infrequently, by 1988 all publicly owned treatment works will be subject to civil penalties if they are not in compliance with the secondary treatment standard. The threat of enforcement may be sufficient to promote the local construction of treatment plants, regardless of whether federal aid is continued.

Alternative Strategies

Other arguments favor continuing federal aid. First, the original logic behind federal intervention remains valid today. Because the benefits of clean water extend across state boundaries, a regional and perhaps federal role exists in helping attain them. Few localities are willing to pay for secondary or more advanced treatment facilities that solve more than their own problems with local water quality. Despite the threat of penalties for noncompliance, some facilities might not get built without federal assistance, thereby impeding the attainment of clean water. Federal grants can compensate local taxpayers for benefits that accrue outside their jurisdictions, not only promoting equity but also speeding the process of cleaning up U.S. waterways.

Proponents of federal grants would argue that withdrawing federal aid now, after helping only half of all eligible municipalities build the required treatment works, would put an inequitable burden on the remaining municipalities. These communities face the same mandate to build, but would not enjoy any federal assistance. Because of economies of scale, residents of many small communities--accounting for 30 percent of remaining needs but just 15 percent of remaining population--would pay much more for new facilities than would large communities with 53 percent of outstanding needs and 68 percent of the remaining population. [8] The relatively high burden on small or rural communities could discourage investment in treatment facilities, delaying achievement of cleaner waterways.

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7. For additional details, see Congressional Budget Office, *The Budget of the Environmental Protection Agency: An Overview of Selected Proposals* (April 1984).

8. See Environmental Protection Agency, *Study of the Future Federal Role in Municipal Wastewater Treatment*, Report to the Administrator (December 1984).

Should federal aid continue, the chief issues facing the Congress regard the level, targeting, and terms of such support. In addition to the option of maintaining current policy, alternatives for continuing federal aid include using federal grants to help capitalize state revolving loan funds (similar to those proposed by the Senate and the House) and retaining the current grants structure but adding other regulatory reforms.

Establish Revolving Loan Funds. At no net increase in federal outlays, federal appropriations could be matched with equal state contributions to set up revolving loan funds administered by the states.[9] Pooled federal and state contributions would be repackaged as low-interest loans to localities, whose pooled repayments in turn would revolve as new loans to other localities at a later time. Compared with current policy, this alternative would have the advantages of increasing the leverage of federal dollars, allowing treatment capacity to be built more rapidly in the early years, relieving the federal government of long-term financial responsibilities, and setting up permanent sources of financing capital at the state level. Although capitalization rates and loan terms could vary, about $60 billion in new treatment facilities could be built by the year 2000 if the federal and state governments each contributed $2.4 billion a year for five years and if 20-year loans to localities were made at 5 percent interest for 55 percent of construction costs.[10] Some $45 billion in new facilities could be built in the first five years of this program. Federal responsibilities would end after five years, and the federal and state contributions would be repaid within 25 years. This fund could continue to make loans for expansion or rehabilitation beginning at $2.3 billion a year in the year 2000 and growing every year the fund operated, reaching $4.3 billion a year in 2010.

This option would shift the cost of building new wastewater treatment facilities from the federal government to state and local governments as well as users. For example, the 50 states, which in the aggregate now spend about $2 billion a year, would have to increase their total outlays for five years to capitalize the fund described above. Of course, a fund capitalized with federal contributions only, or one capitalized jointly but at lower levels, could reduce expected financing burdens on states. User fees would also be higher than fees currently set to provide the 45 percent local share of EPA grants, but they would be well below the fees required to cover facilities that are 100 percent locally financed.

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[9] In addition to their application to financing of wastewater treatment plants, similar revolving funds have been proposed by the Congress to finance infrastructure in general. For a technical review of some of these proposals, see Congressional Budget Office, "Infrastructure Revolving Funds: A First Review," Staff Working Paper (May 1985).

[10] Other types of state revolving loan funds are also feasible. For a complete discussion of this option, see Congressional Budget Office, *Efficient Investments in Wastewater Treatment Plants* (June 1985).

Retain Current Grants Structure With Regulatory Changes. Although regulatory reforms offer no new funding sources or financial management systems, they could obviate the need for some types of costly investment, allowing more efficient targeting of limited federal grants. Thus, water quality improvements might be achieved more rapidly in some areas, while relaxing standards or permitting innovations might preserve water quality at lower cost in others.

The General Accounting Office (GAO) estimated that localities could save between $5 billion and $12 billion if the EPA continued to encourage local applications for ocean discharges of partially treated wastewater in lieu of more expensive chemical and/or biological treatment.[11] The GAO estimate is probably high for a number of reasons, but the net savings arising from this practice could still be sizable.

Innovative permitting practices might also save money in the long run.[12] A number of practices have been shown to reduce both capital and operating costs of municipal treatment facilities. Trading mechanisms such as the exchange of pollutant discharge allowances among treatment plants or substitution of nonpoint-source (runoff) controls for point-source controls encourage more efficient allocation, among multiple dischargers, of a total wasteload to a stream. Other innovations make greater use of a water body's natural capacity to degrade conventional pollutants. These practices include seasonal discharge permits, flow-variable permits, seasonal water quality standards, and site-specific standards.

Results of such innovations vary, but they usually involve a net cost savings for the dischargers, compliance with minimum standards for the quality of treated sewage, and maintenance of standards for stream water quality. Flow-variable permits, for example, allow dischargers to vary the limits on the amount of pollutants released to a stream according to variations in the stream's ability to degrade wastes. Higher stream flows or lower temperatures allow natural degradation of more wastes. A study conducted in North Carolina estimated that such a system would save about $2.9 million a year in wastewater treatment costs. 13/

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[11] See General Accounting Office, *Billions Could Be Saved Through Waivers for Coastal Wastewater Treatment Plants* (May 22, 1981).

[12] For additional details, see Donna Downing and Stuart Sessions, *Innovative Water-Quality Based Permitting: A Policy Perspective*, presented at the 57th Annual Conference of the Water Pollution Control Federation, New Orleans (September 1984).

Regulatory reform could allow more communities to comply with mandates for clean water faster than under current policy, although estimating exact improvements would be difficult. To the extent that regulatory reforms resulted in savings in some localities, federal resources could be reallocated to other communities that have little capacity to make similar savings.

On the other hand, some of these reforms could increase federal or state administrative or enforcement efforts. Ocean discharge waivers and innovative permitting schemes would require added staff review and water quality modeling during permit development. Once the reform was in place, additional effluent and stream quality monitoring might be necessary. Some or all of these added costs could be defrayed with permit fees.

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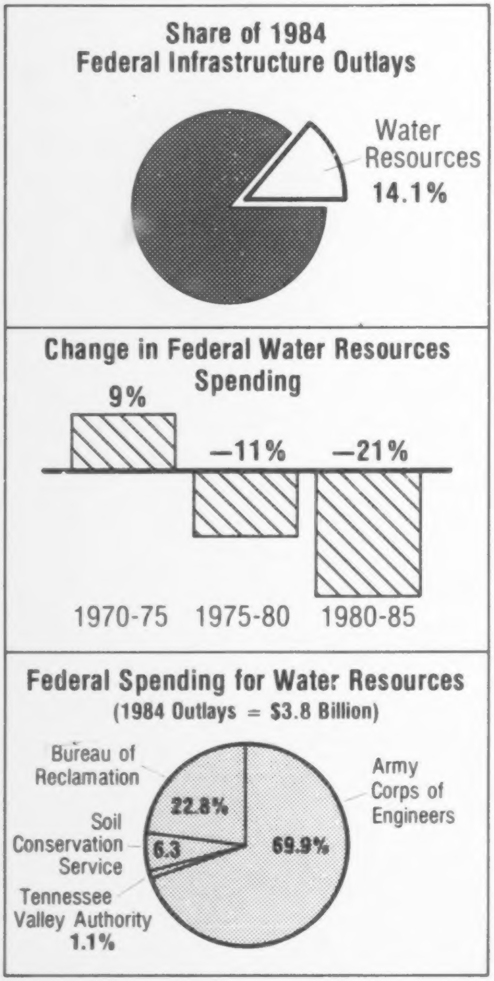
13. See Hargett and Seagraves, *Benefits and Costs of Seasonal Effluent Limits in North Carolina*, North Carolina Water Resources Research Institute. Raleigh, North Carolina (no date).

CHAPTER VI

WATER RESOURCES



Share of 1984 Federal Infrastructure Outlays

Change in Federal Water Resources Spending

Federal Spending for Water Resources (1984 Outlays = $3.8 Billion)

Annual federal spending for water resources declined 21% from 1980–1985, after rising 9% during 1970–1975 and dropping back 11% between 1975 and 1980. In 1984, federal funding of water resources represented 14% of all federal infrastructure spending, with 70% of funds devoted to the programs administered by the Army Corps of Engineers.

The federal government, largely through the U.S. Army Corps of Engineers, plays the dominant role in building and maintaining the nation's water resource public works, including inland waterways (locks, dams, and channel dredging), ports and harbors, and multipurpose dams. For most types of projects, the federal government finances all capital and operating costs but ultimately pays slightly less because of state contributions and reimbursements from users. Although the direct beneficiaries of many of these programs are commercial enterprises (oceangoing shipping, the inland barge industry, and agribusiness), users pay for only a small fraction of the costs.

DEVELOPMENT OF THE FEDERAL ROLE

Federal involvement in the construction and maintenance of water resources originated in the early 1800s, largely out of a concern for the nation's regional development and economic growth. Some 20 federal acts, dating back over a century, have formed the federal water resources program for the four agencies that have primary responsibility for water resources projects: the U.S. Army Corps of Engineers (Corps), the Department of the Interior's Bureau of Reclamation (Bureau), the Department of Agriculture's Soil Conservation Service (SCS), and the Tennessee Valley Authority (TVA).

All four of these agencies finance, build, and sometimes operate dams for a wide range of purposes, including flood control, drainage, irrigation, municipal and industrial water supply, recreation, fish and wildlife conservation, navigation, hydroelectric power, and area redevelopment. The Corps has built and maintained inland waterways and ports under various rivers and harbors acts since 1826. The inland waterway network was built originally to provide transport services to developing regions. Inland and coastal ports were built to aid commerce and to meet national defense needs. With the original purpose of settling the West, the federal government, largely through programs of the Bureau of Reclamation, has built almost 700 dams since 1902. In the 1930s, the Tennessee Valley Authority began to develop the water resources of the entire Tennessee River basin to stimulate economic growth in the South.

Trends in Federal Spending

In the 1960s, annual federal spending for construction, operation, and maintenance of water resources projects averaged between $4.2 billion and $6.1 billion (in 1984 dollars). Since peaking in 1966, federal spending has generally declined, reaching a low point of $3.4 billion in 1984. Total spending was flat between 1982 and 1984 (see Figure 15). Since the late 1970s, federal capital expenditures have also declined--from $3.4 billion in 1977 to $2.0 billion in 1984 (see Figure 16). The Corps of Engineers' combined capital outlays for flood control, multipurpose dams, and navigation, for example, fell from about $2.4 billion to $1.1 billion between 1977 and 1984.

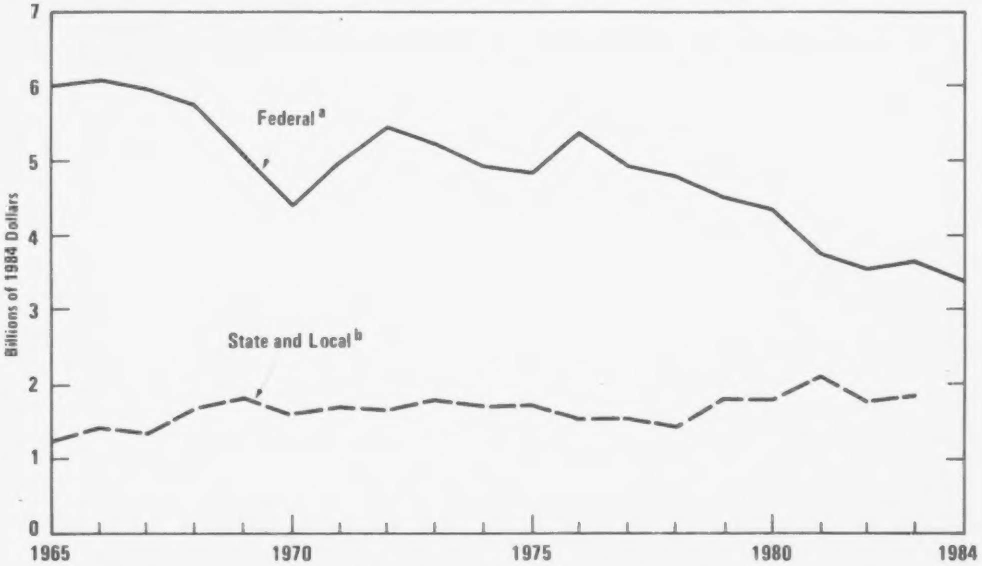
The primary reason for such a steep decrease, besides budgetary pressures, has been the inability of the Congress and the Executive Branch to agree on the appropriate role of the federal government in making investments in water resources. As a result, no major federal water resources projects have been authorized since 1976. With most of the federally important water projects already built, water resources expenditures appear to be shifting away from massive new construction projects and toward rehabilitation and more efficient management of existing facilities.

Aggregate state and local spending has grown in response to the federal devolution since 1977, but not enough to compensate for the loss of federal funding. Like federal spending trends, state and local spending appears to be shifting away from the construction of new facilities and toward the operation of existing ones. In 1982, for example, steadily increasing operating expenditures accounted for a greater percentage of total spending than did capital expenditures.

Current Federal Policy

The rationales behind current federal programs still embody the original purposes of federal involvement in water resources--to promote national and regional development, provide subsidies to certain user groups, and provide benefits for the public good.

Figure 15.
Public Spending for Water Resources by Level of Government, Fiscal Years 1965-1984



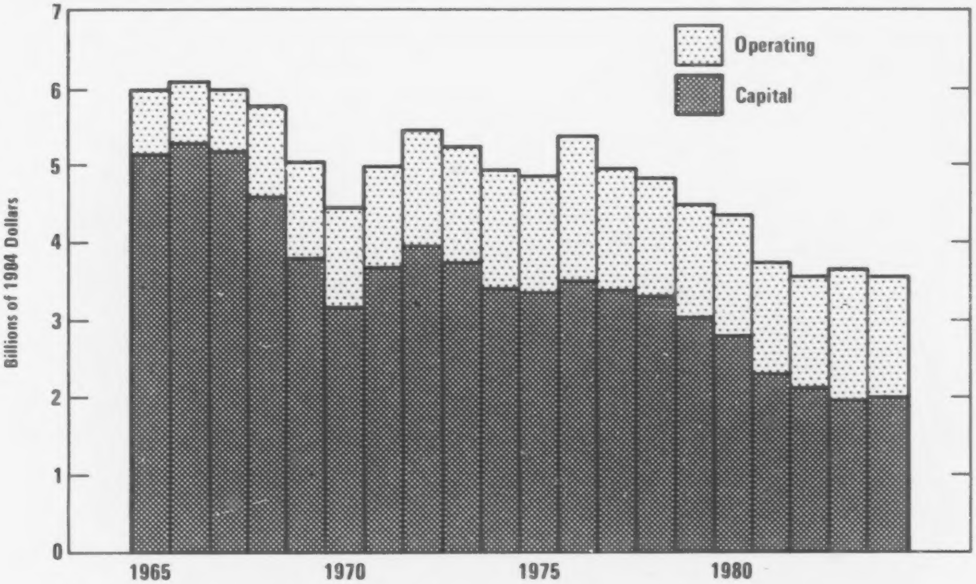
SOURCE: Congressional Budget Office from data in *Budget of the United States Government*, and in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

[a] Excludes federal spending for research and development by all agencies, and spending under the Mississippi River and Tributaries Account by the Army Corps of Engineers.

[b] Data for state and local spending not available for 1984.

Figure 16.

Federal Spending for Water Resources by Purpose, Fiscal Years 1965-1984



SOURCE: Congressional Budget Office from data in *Budget of the United States Government.*

NOTE: Excludes federal spending for research and development by all agencies, and spending under the Mississippi River and Tributaries Account by the Army Corps of Engineers.

The federal government finances and pays for an average of 70 percent of all capital and operating expenses for water resources. Paying only 30 cents on the dollar, local recipients of federally subsidized water projects tend to demand more development and to undervalue water and related water-based services more than they would if they paid a greater percentage of these investments. In the past, this has led to inefficient public investments and wasteful use of resources, once developed. The issues of who should select, finance, and pay for such projects are now the principal concerns of water resources reform legislation pending in the Congress (H.R. 6; S. 366). In place of more traditional goals of federal involvement, the Congress now seems poised to promote economic efficiency as a goal of investment in water resources.

Of the roughly $3.8 billion spent by all federal agencies in 1984 (capital, operating, research, and administrative expenses), the Corps of Engineers accounted for 70 percent, the Bureau for 23 percent, the SCS for 6 percent, and the TVA for 1 percent. Viewed by purpose, about 18 percent of federal capital plus operating spending for water resources in 1984 supported deep-draft navigation projects, 22 percent was used for inland waterway projects, and the balance went for multipurpose projects.[1] About $2.0 billion (or 53 percent) of the spending financed new construction or major rehabilitation, with approximately $1.4 billion (38 percent) supporting the operation and maintenance of existing facilities. The remainder supported general investigations, research, and administration.

Although programs vary somewhat among agencies, the general process by which a local water resources problem eventually is solved with a federal project remains the same. On the basis of a local request to investigate such a problem, the Congress appropriates funds for a federal study. The lead federal agency for the study is selected on the basis of the type of water problem and the region of the country. If the federal study indicates that a construction project would solve the problem in an economical and environmentally acceptable way, the Congress includes it in the next water resources authorization bill. Historically, these so-called "omnibus bills" have been passed every two to four years, although the most recent bill was in 1976. Once authorized, a water project may or may not be built, subject to annual appropriations. Currently, there is about $60 billion in authorized but unfinished or not-yet-started federal water projects.

The federal share of total project costs varies according to the type of project and the lead federal agency.[2] For the average inland waterway project, the federal government pays about 94 percent of combined capital and operating costs over the project's life. The federal government's share of costs for a typical commercial harbor project is approximately 84 percent. For multipurpose dam projects, the federal share averages 70 percent of combined costs, but may range anywhere from about 36 percent for a single-purpose hydroelectric project to 89 percent for a rural flood control project. If an irrigation project is built by the Bureau, the federal government pays 82 percent, on average, of the combined construction and operating costs over the project's life. In contrast, if an irrigation project is built by the SCS, the federal government's share is only 46 percent. States or localities generally contribute land, easements, or rights-of-way rather than cash. Users sometimes repay part of the initial capital cost and, more often, particularly in the case of multipurpose projects, they pay operating and maintenance costs.

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[1] Multipurpose projects serve several functions, including flood control, irrigation, navigation, hydroelectric power generation, municipal and industrial water supply, and recreation.

[2] For details, see Congressional Budget Office, *Current Cost Sharing and Financing Policies for Federal and State Water Resources Development* (July 1983).

Only limited fees are now collected from users of federally built projects. In 1984, for example, the existing federal barge tax--8 cents per gallon of motor fuel--recovered only $39 million of the $646 million spent on the inland waterway system that year. (This fee is scheduled to increase to 10 cents per gallon this October.) Users of federally dredged ports pay no fees to the federal government in return for these services. Fees now paid for most federally provided irrigation water recover less than 20 percent of associated federal costs. [3]

BUDGET PROPOSALS FOR FISCAL YEAR 1986: ISSUES AND ALTERNATIVES

Major issues concern the appropriate level and form of federal assistance for the various types of water resources projects, and the potential for improving the efficiency of investments in water resources by requiring more local financing of water projects and recovering a greater share of project costs from users.

Historically, the federal role in water resources has been based largely on the goal of promoting regional economic development.[4] With the maturing of regional economies and the completion of most water projects necessary to achieve regional development goals, some of the major concerns motivating federal subsidization of water resources infrastructure no longer apply. Nevertheless, large federal subsidies have continued, even in areas where there are significant opportunities for local financing and cost recovery through user fees. Federally subsidized water and related services tend to be undervalued and overconsumed by users. This stimulates demand for continued subsidies rather than promoting cost-effective, user-supported investments.

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3. See Chapter VII of Congressional Budget Office, *Charging for Federal Services* (December 1983).

4. Several other concerns have provided a basis for federal involvement in certain water resource projects: national defense and security (ports and harbors); the benefits of centralized coordination (inland waterways, multistate reservoir systems); and the presence of external costs and benefits, as in water quality or flood control.

The Administration's Budget Proposals

The Administration's budget proposals call for reducing subsidies to inland and deep-draft navigation interests and to recipients of federally produced hydropower, but largely continues the federal subsidy to agricultural interests and recipients of federally provided flood control projects. By 1988 the proposal would result in a 25 percent reduction in spending relative to current policy--from $4.1 billion to $3.1 billion--for the Corps of Engineers, Bureau of Reclamation, Soil Conservation Service, and Tennessee Valley Authority (see Table 7). This reduction in spending also represents a decline of 22 percent relative to 1985.

Perhaps more significant than the requested reduction are two specific proposals to increase revenues. The first calls for $218 million in increased user fees for inland navigation and $241 million in repayments from port operators, who in turn may assess fees against inland barge operators and ships using shallow- and deep-draft ports. Both kinds of fees are designed to recover more of the federal expenditures that subsidize construction and dredging for commercial waterborne transportation. The second proposal would restructure all outstanding debt of the federal agencies that market hydropower produced at Corps- and Bureau-owned dams. This proposal would generate about $941 million in new revenues in 1986 and $3.4 billion over the five-year period 1986-1990. Finally, the Administration proposes to eliminate or restrict some programs of the Soil Conservation Service.

Outlays under the Senate and House budget resolutions would be slightly smaller than those under current policy. The Senate resolution parallels the Administration's call for higher user fees for both inland waterways and deep-draft ports. Both resolutions differ from the Administration's proposal in that they would continue the Soil Conservation Service.

New User Fees. The Administration proposes phasing in a systemwide fee of 0.15 cents per ton-mile eventually to recover about 70 percent of federal capital and operating expenses for the inland waterway system.[5] Local operators of large deep-draft ports (14 feet deep or more with at least 1 million tons of commerce annually) would pay actual operating and maintenance costs up to a cap of 28 cents per ton, and local operators of small deep-draft ports and all shallow-draft ports (less than 14 feet deep) would pay 70 percent of operating costs (with no cap provision). If these costs

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[5] A ton-mile is a measure of freight movement that combines both mass and distance carried. For example, a barge carrying 100 tons of steel a distance of 10 miles would account for 1,000 ton-miles of carriage.

TABLE 7. FEDERAL SPENDING FOR WATER RESOURCES, FISCAL YEARS 1984-1988
(Outlays in millions of current dollars)

			1988			
Program	1984	1985	Current Policy	Administration Proposal	Senate Resolution	House Resolution
Corps of Engineers						
Construction	1,103	1,039	978	975	964	948
Operations and maintenance	1,287	1,304	1,417	874	890	1,380
Other a/	280	290	316	241	298	311
Subtotal	2,670	2,633	2,711	2,090	2,152	2,639
Bureau of Reclamation						
Construction	656	740	809	721	784	785
Operations and maintenance	135	141	161	141	144	158
Other b/	79	89	103	80	82	101
Subtotal	870	970	1,073	942	1,010	1,044
Soil Conservation Service c/	241	298	225	0	176	217
Tennessee Valley Authority d/	42	48	51	50	50	50
Total	3,823	3,949	4,060	3,082	3,388	3,950

SOURCE: Congressional Budget Office.

NOTE: Outlays for 1985 and 1988 are CBO estimates.

a. Includes general investigations, administration, and flood control and coastal emergencies (excludes spending under the Mississippi River and Tributaries Account).

b. Includes general investigations and administration.

c. Includes river basin surveys and investigations, watershed planning, and watershed and flood prevention.

d. Water resources capital investment and operating expenses.

were passed on as fees to users, those ships using small deep-draft and all shallow-draft ports would pay about $2.55 per ton, while ships using large deep-draft ports would pay just $0.18 per ton. This discrepancy in fees would be likely to cause a shift of commercial traffic from small, shallow ports to large, deep-draft ports.

Restructure Outstanding Debt of the Federal Power Marketing Agencies. Five federal power marketing agencies (PMAs) sell hydroelectric power produced at 123 dams owned by the Corps of Engineers and by the Bureau of Reclamation. Under current policy, the PMAs have been allowed to defer repayment of federal capital expenditures for up to 50 years. Of the $14.5 billion invested in the federal power complex (dams plus transmission lines), only $2.5 billion has been repaid. Deferring repayment imposes significant federal refinancing costs each year, which in effect is a subsidy paid by all taxpayers for the benefit of consumers of inexpensive federal hydropower (mostly western communities).

The Administration's 1986 budget proposal would restructure the $12 billion in outstanding PMA debt. Under a compressed schedule of principal repayment with interest recalculated at the current cost of Treasury borrowing, 1986 revenues would increase by $941 million over current repayment revenues. Over the five years from 1986 through 1990, revenues would increase by $3.4 billion. Customers now receiving subsidized electricity would face 25 percent increases in their electricity bills or, on average, increases of about $24 a month. 6/

Eliminate or Restrict Some Programs of the Soil Conservation Service. The Administration proposes terminating the Soil Conservation Service's small watershed program (saving about $160 million in 1986), claiming that flood control and drainage facilities constructed under this program generally can be financed and built by other federal agencies or by nonfederal jurisdictions.

Alternative Strategies

The Administration's proposals would substantially reduce subsidies to inland navigation interests, users of all ports, and recipients of federal hydropower. Although new user fees would recover about 40 percent of the 1986 federal

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6. Testimony of the Honorable David A. Stockman before the Committee on Interior and Insular Affairs, Subcommittee on General Oversight, Northwest Power and Forest Management, House of Representatives, March 7, 1985.

expenditures (60 percent by 1990) for these navigation purposes, opportunities exist for even greater cost recovery through higher user fees and other mechanisms. In addition, limiting the scope of SCS activities could stimulate more local financing in place of federal subsidies. But other water issues remain largely unaddressed by the Administration's budget. Under current policy, for example, local sponsors pay only about one-tenth of the cost to construct dams for flood control, and the federal government continues to provide heavily subsidized irrigation water to western farmers--a subsidy that has outlived its original purpose of hastening the development of the West.

Increase Cost Recovery for Federal Water Projects. Water resources projects typically provide both marketable and nonmarketable benefits. Marketable benefits--those received directly by users in discrete quantities--include navigation; water supply for irrigation, municipal, and industrial use; hydroelectric power; and recreation. Nonmarketable benefits are available to the general public but offer limited opportunity to measure or restrict individuals' use. These benefits include flood control, fish and wildlife enhancement, and area redevelopment. The federal cost of providing marketable benefits could be fully recovered by charging fees according to use and by allocating federal spending according to users' willingness to pay those fees. The cost of providing nonmarketable benefits could be recovered through increased general tax assessments.

As mentioned above, the low fee that users now pay for federally provided irrigation water recovers less than 20 percent of federal construction costs. Although existing contractual arrangements with farmers would prohibit immediate full-cost pricing, fees could be raised gradually over the longer term as these contracts expire. By the year 2000, for example, today's revenues of about $55 million a year could be increased to about $450 million a year.[7] Higher fees would not only repay federal expenses, but they also would promote more efficient use of irrigation water and limit the number of future irrigation projects to just those that users would be willing to pay for.

The federal expenditures for flood control could be repaid from special value-added taxes levied on owners of real estate within the flood-protected region. Such taxes would be appropriate because the federally financed project would increase the value of all flood-protected lands. Like direct federal user fees in the irrigation case, these taxes would repay the federal expense while providing a market test of the real benefits of the flood control project. Only communities willing to pay the costs of flood protection would promote such projects. One serious drawback to such a proposal is that some communities might be encouraged to underinvest because some benefits might accrue to places outside their district or because of difficulties in accurately assessing the chances of unlikely events such as floods.

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[7] For details, see Congressional Budget Office, *Charging for Federal Services* (December 1983).

User fees and special tax assessments would raise the prices of water and related services. For example, irrigators who now pay, on average, 0.6 cents per 1,000 gallons would pay about 9.2 cents per 1,000 gallons under full-cost recovery. If the full costs of 1986 federal expenses on ports and inland waterways were to be recovered with a systemwide fee, instead of a lesser amount as proposed by the Administration, overseas shippers would pay an average of 18 cents per ton of cargo (they now pay no federal fees). While this would cause a shift in traffic toward the larger ports, it would probably have little effect on the overall level of shipping. Barges on the inland system would pay an average of 0.3 cents per ton-mile (compared with the 0.025 cents per ton-mile they pay under the current federal fuel tax). Rates for federally provided hydroelectric power and municipal and industrial water supply could double under a full-cost recovery plan.

Return Project Control and Financing to Local Sponsors. Under current policy, the federal government finances and selects most types of water resource projects. However, increased local financing of projects (especially those that yield primarily local benefits)--coupled with greater control over local project selection, size, and design--could enhance the cost effectiveness of these investments, while meeting the site-specific water resource needs of localities. The Administration, in recently proposed legislation (S. 534 and S. 967 and companion bills in the House), has captured this concern with a proposal for new local financing requirements by type of project (see Table 8). Under this bill, the local share of project construction costs, either cash or contributions in kind, must be contributed during the construction period.[8] If state or local governments choose to subsidize users, local financing could reduce the fees paid later by local beneficiaries.

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8. Nonfederal contributions for flood control, recreation, and irrigation projects are subject to the local sponsor's "ability to pay," as determined by the federal government. In the event that local sponsors are unable to finance up front, they may borrow their financing share from the federal government and repay the loan over 50 years with interest set at the federal cost of borrowing.

TABLE 8. FINANCING REQUIREMENTS FOR CONSTRUCTION: COMPARISON OF CURRENT REQUIREMENTS AND THE ADMINISTRATION'S PROPOSAL (In percents)

Type of Project	Local Financing Share	
	Current Policy a/	Administration's Proposal
Municipal and Industrial Water Supply	54	100
Hydroelectric Power	63	100
Fish and Wildlife Enhancement	7	100
Deep-Draft Ports b/	16	70
Super-Tanker Ports c/	16	100 d/
Inland Navigation	6	70 e/
Recreation	14	50 f/
Flood Control	5-14	35 f/
Irrigation f/	15	35

SOURCE: Congressional Budget Office, *Efficient Investments in Water Resources: Issues and Options* (August 1983); S. 534 and S. 967.

a. These are effective local cost-sharing rates, which combine local construction financing shares with local cost repayment over time. Actual financing shares are generally much lower and can be zero.

b. Less than 45 feet deep.

c. Deeper than 45 feet.

d. The local sponsor would pay 70 percent of the cost of deepening the port to 45 feet, but 100 percent of the cost of deepening beyond 45 feet.

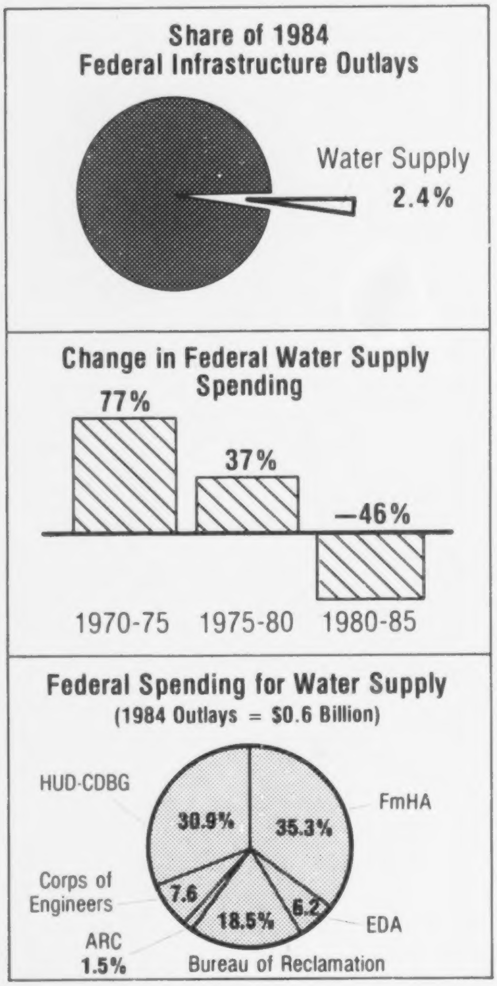
e. A fee of 0.15 cents per ton-mile was set to recover 70 percent, but collections could fall short of this goal.

f. Subject to limitations on local beneficiaries' "ability to pay" as determined by the Corps of Engineers. If unable to pay during construction, a local sponsor must repay this share over a 50-year period at market rates of interest.

The Administration's proposal would increase significantly the current cost shares paid by local sponsors of water projects. For example, local sponsors of hydroelectric power or municipal water supply projects now finance none of the construction costs, though they repay about half of them over 40 to 50 years. Under the Administration's proposal, they would have to finance the entire cost of these projects. Sponsors of flood control and irrigation projects now finance about 15 percent of construction costs (largely through contributions of land, easements, and rights-of-way), but would have to finance 35 percent under this proposal. For flood control and irrigation, however, an "ability to pay" provision could allow the local financing share to be paid over 50 years through a federal loan at an interest rate based on the federal cost of borrowing.

CHAPTER VII

WATER SUPPLY



Annual direct federal spending for water supply declined 46% from 1980-1985, following increases of 77% from 1970-1975 and 37% from 1975-1980. Federal funding of water supply represented only 2% of total federal infrastructure spending in 1984, with funding dominated by FmHA and HUD's Community Development Block Grant programs.

Financing and operating public water supply systems has traditionally been the responsibility of local governments. In 1984, localities spent about $13.5 billion to build and operate water supply systems. Local user fees and other local revenues commonly support capital and operating expenses. Thus, only modest direct federal assistance is provided today, and this aid is targeted toward rural and fiscally troubled urban areas. In 1984, about $650 million in direct federal aid to municipal water supply systems was available under programs administered by the Farmers Home Administration (FmHA), the Department of Housing and Urban Development (HUD), the Economic Development Administration (EDA), the Appalachian Regional Commission (ARC), the Army Corps of Engineers (Corps), and the Bureau of Reclamation (Bureau) within the Department of the Interior.

DEVELOPMENT OF THE FEDERAL ROLE

In 1926, the Congress authorized a new program of water supply loans and grants to promote the growth of rural areas. Administered by the Farmers Home Administration, this program remains the major source of federal aid dedicated to water supply systems. Three more recent federal programs (administered by the Economic Development Administration, the Appalachian Regional Commission, and the Department of Housing and Urban Development) provide development grants that can be used to finance the construction of water supply systems, among other types of projects. Though they do not build single-purpose water supply projects, both the Army Corps of Engineers and the Bureau of Reclamation have been authorized since 1958 to add extra storage capacity for public water supplies to ongoing water resources development projects.

Trends in Federal Spending

Despite a variety of programs, the total direct federal contribution to overall public spending for water supply systems has remained modest relative to other areas of infrastructure, and in fact has dropped by more than half since 1977 (see Figure 17).[1] In that year, all federal agencies together spent an estimated $1.7 billion, or one-third of total public expenditures to build water supply systems (about 14 percent of all public expenditures on water supply including capital and operating outlays). By 1984, direct federal expenditures had fallen to just $0.6 billion, or 14 percent of combined federal, state, and local water supply spending for construction (or 5 percent of total public spending for water supply).

Much of the decrease in federal spending was a result of general pressure to reduce the federal deficit. States and municipalities responded by increasing their capital spending. Throughout the 1960s and early 1970s, combined state and local construction expenditures averaged about $3.1 billion a year, increasing to $3.9 billion a year in the late 1970s and early 1980s (see Figure 18). Operating costs also rose--from $5.1 billion in 1970 to $9.6 billion in 1984 (an 88 percent real increase).

Current Federal Programs

Federal programs that support construction of local water supply systems are designed to stimulate regional economic development and help low-income communities afford water supply improvements. These programs, and the agencies that administer them, are discussed in the following sections.

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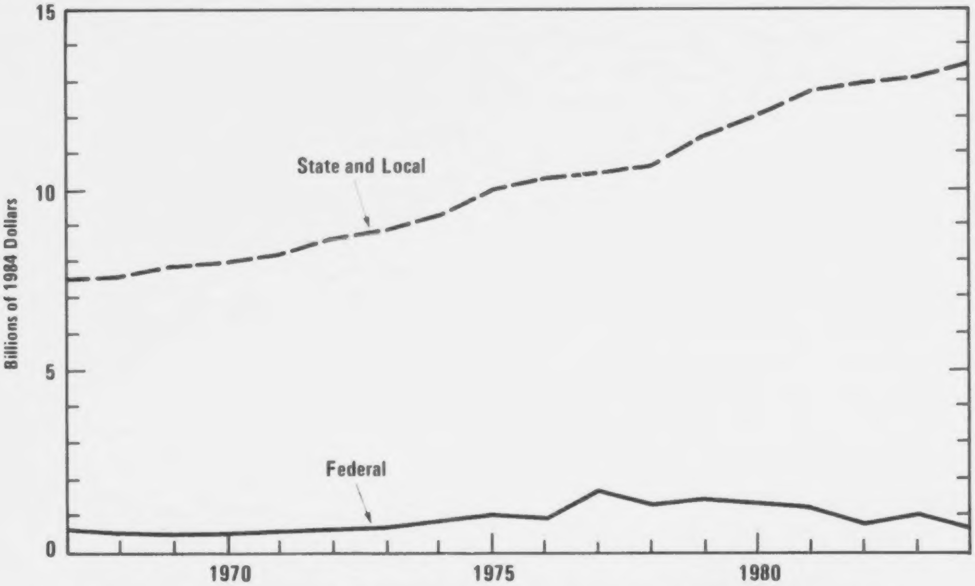
[1] In addition to direct federal outlays, the federal government also supports local construction of water supply systems through tax expenditures. In 1983, for example, $2.8 billion in tax-exempt municipal bonds was issued by localities to raise capital for improvements to water supply systems. The 20-year present value (assuming a 10 percent discount rate) of federal tax revenue losses amounts to an estimated $0.9 billion.

Farmers Home Administration. Available to all localities with populations of under 10,000, FmHA funds are used for installation, repair, improvement, or expansion of rural facilities but not for operating expenses. Funds are disbursed primarily as low-interest loans (5 percent interest), but grants are available to communities that cannot pay "reasonable" user charges as measured by the ratio of debt service to median local income. Appropriations are allocated among the states on the basis of rural population and number of households below the poverty level. Outlays peaked in 1979 at about $1.1

Figure 17.
Public Spending for Water Supply by Level of Government, Fiscal Years 1967-1984

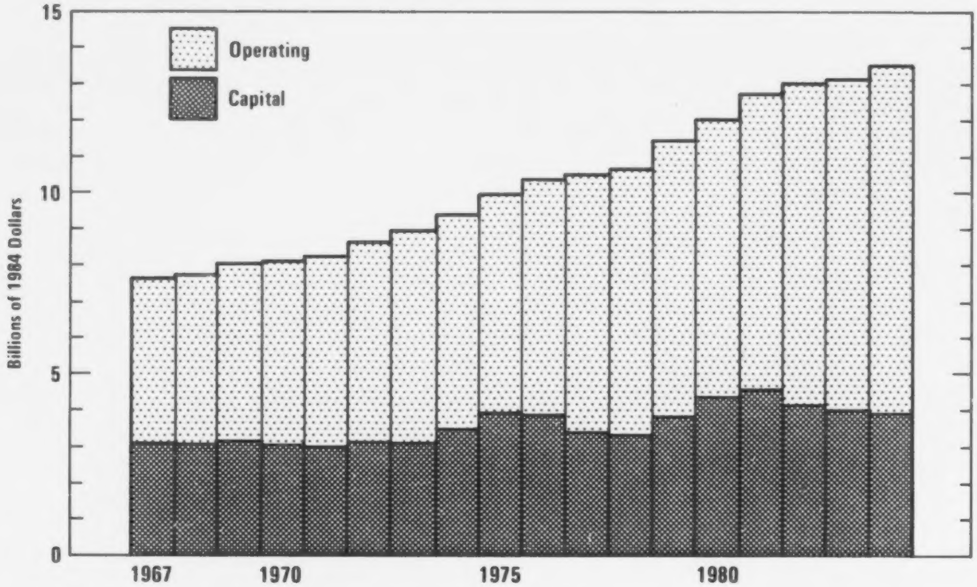


SOURCE: Congressional Budget Office from data in *Budget of the United States Government;* data supplied by Farmers Home Administration, Appalachian Regional Commission, Economic Development Administration, and Department of Housing and Urban Development; and data in Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

NOTE: State and local spending for 1984 is a CBO estimate based on growth rates over the 1980-1983 period.

Figure 18.

State and Local Spending for Water Supply by Purpose, Fiscal Years 1967-1984



SOURCE: Congressional Budget Office from Department of Commerce, Bureau of the Census, *Annual Survey of Government Finances.*

NOTE: State and local spending for 1984 is a CBO estimate based on growth rates over the 1980-1983 period.

billion, but have since fallen by 80 percent to the 1984 level of $0.2 billion.[2]

Department of Housing and Urban Development. Since 1974, the Department of Housing and Urban Development has supported two programs: entitlement block grants targeted toward low-income, urban communities and a discretionary program for small cities that is funded by HUD but largely administered by the states. Community Development Block Grants are distributed to cities and counties with populations above 50,000 as entitlements based on population, the extent of poverty, and the extent of overcrowding. About 700 local units of government are eligible to apply for entitlement grants each year. Additional discretionary HUD funds are available to cities with fewer than 50,000 inhabitants on a project-by-project basis. Local governments are free to use funds from both programs for a wide variety of purposes including water supply. Annual federal appropriations and the percentage of funds used for water supply vary, but over the last several years an average of 3 percent of the total appropriation, or between $40 million and $50 million a year in entitlements and between $100 million and $200 million a year in discretionary grants, has been spent for this purpose.

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[2] Independent of FmHA's grant programs, the loan program is administered through the Rural Development Insurance Fund (RDIF). The RDIF sells certificates of beneficial ownership in its loan portfolio to the Federal Financing Bank. Receipts from these sales offset RDIF outlays that would have resulted from the original lending. Thus, no on-budget outlays result; instead, lending activity shows up as off-budget outlays of the Federal Financing Bank. On-budget outlays of the RDIF only cover interest subsidies and other losses. Thus, outlays will understate actual lending activity. In 1984, for example, FmHA loan outlays for water supply were $162 million compared with $523 million in actual loan disbursements.

Economic Development Administration and Appalachian Regional Commission. The much smaller programs of the Economic Development Administration and the Appalachian Regional Commission disburse federal funds as individual project grants to states, cities, and counties. Since 1965, the EDA has offered grants designed to stimulate growth in underdeveloped regions of the nation; about 20 percent of these grants fund improvements to water supplies. Project grants administered by the ARC also have been available since 1965 to stimulate social and economic development in that region. Under both programs, grants can cover up to 80 percent of total project costs. Eligibility requirements generally take into account median family income, the unemployment rate, and availability of other resources. Since 1965, spending for water supply projects under EDA's program has fluctuated between $35 million and $45 million, while ARC funds have remained steady at around $10 million a year.

Army Corps of Engineers and Bureau of Reclamation. Under the Water Supply Act of 1958, both the Corps and the Bureau are authorized to include storage for municipal water supply in ongoing multipurpose water projects. Neither agency, however, may build single-purpose water supply projects. As of 1979, these agencies had invested a total of $236 million to provide municipal water storage in completed reservoirs; they will spend another $783 million for storage in reservoirs that are under construction or planned. This spending has increased gradually since the 1960s, with combined Corps and Bureau outlays for water supply estimated at $170 million in 1984. These programs have primarily benefited western communities.

Unlike most other federal aid for water supply, both the Corps' and the Bureau's regulations require users to repay the federal government for part of the federal investment. Under their programs, user fees effectively cover 54 percent and 71 percent, respectively, of combined federal spending for construction and operation of the water supply portion of reservoirs.

BUDGET PROPOSALS FOR FISCAL YEAR 1986: ISSUES AND ALTERNATIVES

The present federal program in water supply is small and focuses on fiscally troubled urban areas and poor, thinly populated rural regions. Under the Administration's proposals, rural regions would likely face reductions in federal aid. Thus, the central issue in water supply is the ability of localities to finance new investments themselves without imposing prohibitively high rates on users.

The Administration's Budget Proposals

The Administration's proposals for fiscal year 1986 call for discontinuing both the EDA and ARC programs and transferring FmHA's responsibilities to HUD's block grant program. In the aggregate, by 1988 proposed federal spending for water supply would fall to $516 million, or more than 25 percent below current policy (see Table 9). The FmHA loan program would be available in 1986 only to very-low-income communities experiencing exceptional health and safety problems, and would be eliminated in 1987.

In partial compensation, the HUD discretionary grant program would be changed to give the states greater authority to allocate federal funds to localities. The Administration hopes to introduce new legislation to shift some appropriations from the entitlement program into the discretionary program for small cities. This would make it easier for the states to target federal support to the most pressing local needs. But the Administration also has proposed an 11 percent (17 percent real) cutback in total HUD block grant funds, from $3.5 billion in 1985 to $3.1 billion in 1986. Thus, unless a significantly larger portion of block grant funds was spent on water supply in 1986 compared with 1985, it does not appear that the loss in FmHA funding would be offset by changes in the HUD program.

The Senate and House resolutions are quite similar, and both differ from the Administration's proposal in that they would continue the FmHA loan program. The Senate calls for spending $645 million on water supply by 1988, about 9 percent below current policy. The House resolution is slightly higher at $676 million, largely because it would not eliminate the Economic Development Administration and the Appalachian Regional Commission.

Alternative Strategies

The Congressional Budget Office estimates that the aggregate demand for new and rehabilitated public water supply systems will total between $3.6 billion and $5.3 billion a year for the next 20 years.[3] How might localities and states deal with the shortfall in funding for water supply projects resulting from reduced federal assistance?

Options for Localities. The principal source of local water supply capital is locally issued, tax-exempt municipal bonds. In 1983, 334 water supply bonds were issued, raising about $2.7 billion for water supply projects--about a 13 percent increase in water supply bonding activity compared with 1982. An additional 20 percent increase over the 1983 level would be needed to replace all federal aid, and a 10 percent increase would be needed to compensate for the Administration's proposed cut.[4] Although additional local debt could provide a greater share of capital needed for water supply, the municipal bond market may not be able to satisfy the entire demand.

Perhaps the most frequently overlooked solution to local capital shortfalls is rate reform. Low water rates can cause overconsumption of the resource as well as inflated estimates of required future investments in water systems. Higher water rates bring in additional revenues that can be used to support new tax-exempt bonds or that can be set aside as retained earnings earmarked for future capital investments. In addition, reductions in water use resulting from higher rates can forestall the need for new supplies and provide additional time for communities to plan for capital investments. If demand is reduced significantly, new investment may not be needed at all.

In localities experiencing rapid growth, other sources of capital include increased connection fees, repayable advances from developers, or water supply taxes imposed on real estate transactions.

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[3] The estimate is presented as a range because of the range of estimates of land costs, treatment facility costs, reservoir capacities, and component replacement rates. For details, see Congressional Budget Office, *Financing Municipal Water Supply Systems in the 1980s* (forthcoming).

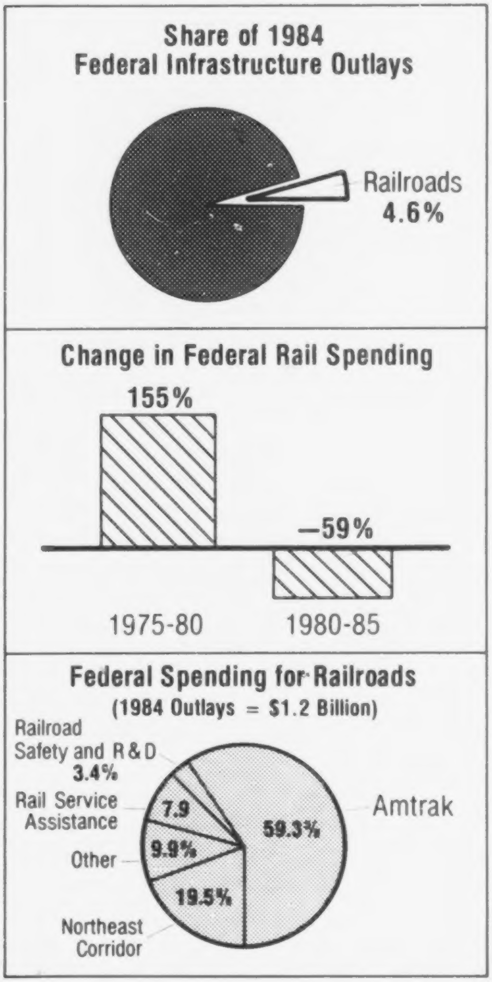
[4] The issuance of tax-free municipal bonds is not cost-free to the federal government. For example, the $3.0 billion in municipal water supply bonds expected to be issued in 1984 will cost the federal government some $1.1 billion over 20 years in lost tax revenue. (This represents the present value of these funds using a 10 percent discount rate--a method for adjusting future year spending to its worth today.) Further, replacing the $700 million in 1986 federal water supply aid with additional municipal bond revenues would cost the federal government about $250 million over 20 years.

Options for States. States can also help by removing many of the institutional barriers to local borrowing. For instance, seven states have set up bond banks to purchase previously unmarketable local bonds, repackaging them for sale as state bonds bearing lower interest rates. Other state options include reforming state-imposed limits for debt or interest rates on locally issued bonds, setting up local bond guarantee programs, or offering local financial management or bonding assistance.

Adjustments for Localities and Users. Regardless of the final sources of capital, local water rates would necessarily increase without direct federal or state subsidies. In 1984, the average water rate in the United States was about $1.00 per 1,000 gallons--a relatively low rate compared with the rates of other publicly supplied utilities and with water rates paid overseas. In European countries, for example, water rates are generally more than twice the average U.S. rate. For most U.S. communities, a doubling of water rates probably would not be overly burdensome. For others--primarily low-income urban centers or sparsely populated rural regions--the remaining federal programs would provide some relief. Small cities might benefit from the proposed shift from entitlement to discretionary distribution of HUD block grants. But it is not clear that all such communities, particularly those in rural areas, would continue to receive federal assistance if the Administration's proposed reductions in funding were enacted.

CHAPTER VIII

RAILROADS



Share of 1984 Federal Infrastructure Outlays

Change in Federal Rail Spending

Federal Spending for Railroads (1984 Outlays = $1.2 Billion)

Federal spending for railroads dropped 59% from 1980-1985, after increasing 155% from 1975-1980. In 1984, federal rail spending represented roughly 5 percent of total federal spending for infrastructure, with more than half of these funds supporting Amtrak.

The federal government's major direct involvement in railroads is through the Federal Railroad Administration (FRA) of the Department of Transportation. In 1984, the FRA provided more than $700 million in capital and operating assistance to Amtrak, the nation's sole provider of intercity rail passenger service. Additional funds were spent on the final stages of modernizing the track between Boston and Washington, D.C., and on several small programs that assist freight railroads. Federal aid to Conrail, the corporation set up in the mid-1970s to replace seven bankrupt eastern railroads, ended several years ago, and the Department of Transportation is in the process of selling the government's shares of Conrail stock.

DEVELOPMENT OF THE FEDERAL ROLE

Federal involvement in railroad transportation dates back to the early years of the industry. The federal government assumed a major role in developing railway infrastructure in the nineteenth century by providing land grants in the West and Midwest for railroad construction. Over 130 million acres--about 7 percent of the continental United States--were distributed this way. (State governments provided land grants equal to an additional 2 percent.) As a result, western railroads were developed more rapidly than would otherwise have been possible; and, in return, the federal government received reduced freight rates for many years. In the first half of the twentieth century, a succession of federal loan and loan guarantee programs helped railroads respond to the dislocations caused by the Depression and the world wars. 1/

Between World War II and the early 1970s, the railroad industry declined. Increased competition from other forms of transportation (primarily truck and barge), rigid economic regulation, financial losses from passenger service, and the railroads' slow adjustment to these changed market conditions combined to threaten bankruptcy for large segments of the industry. Throughout the 1970s, the government instituted a series of legislative and regulatory reforms to address what had become the increasingly untenable position of the railroads. These reforms culminated in the Staggers Rail Act of 1980, which greatly reduced the control over railroad rates exercised by the Interstate Commerce Commission.

Legislative and Regulatory Changes

The Rail Passenger Service Act of 1970 established the National Railroad Passenger Corporation (Amtrak) to relieve rail freight companies of responsibility for increasingly unprofitable intercity passenger service and to ensure that a coordinated national passenger network would be maintained. Amtrak was established as a privately operated, for-profit corporation. Federal assistance was originally intended to be transitional, providing modern equipment and facilities and permitting various unprofitable passenger services to combine into an integrated and profitable national network. In practice, however, Amtrak has never come close to recovering its costs from passenger revenues and has required annual federal grants to finance its operating losses and capital expenditures. Amtrak has received almost $11 billion (in 1984 dollars) in subsidies since its inception, while also benefiting from $2.1 billion spent on improving the trackage along the Northeast Corridor (the network of routes linking Washington, D.C., and Boston, Massachusetts, by way of New York City). 2/

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1. For background, see Congressional Research Service, *Federal Aid to Domestic Transportation* (May 1977), Chapter II, pp. 5-43.

2. For further details, see Congressional Budget Office, *Federal Subsidies for Rail Passenger Service: An Assessment of Amtrak* (July 1982).

A second major set of policies developed in the 1970s addressed the problems associated with the collapse of the Penn Central and six other eastern railroads. Legislation enacted in 1974 and 1976 created the Consolidated Rail Corporation (Conrail)--a for-profit freight railroad--by combining the resources of the bankrupt lines.[3] As with Amtrak, aid to the federally owned but privately managed corporation was intended to be transitional. Federal spending on Conrail since 1976 has totaled $9.1 billion, including $5.2 billion for capital, operating, and commuter subsidies, $3.2 billion to compensate the bankrupt railroads for assets transferred to Conrail, and $700 million for labor protection payments (see Table 10). Conrail has received a total of $10 billion (in 1984 dollars) in federal aid, including $900 million in federal grants and loans to the bankrupt railroads prior to the formal start of Conrail in 1976.

Conrail's continued need for subsidies led to the enactment of the Northeast Rail Service Act of 1981 (NERSA). Following NERSA, Conrail transferred its unprofitable commuter operations to local authorities, was exempted from state and local taxes, negotiated concessions from its employees on wages and work rules, and abandoned many unprofitable lines. Further, NERSA replaced the existing lifetime labor protection guarantees with maximum payments of $20,000 per worker.[4]

Conrail also aggressively used the provisions of the Staggers Rail Act of 1980, which reduced governmental regulation of pricing and marketing strategies for all railroads. These changes enabled railroads to restructure rates and services in order to increase profits and, if rates could not be raised, to abandon more easily their unprofitable routes. These provisions, and those of NERSA, combined to change dramatically the size and structure of Conrail. In 1984, for example, Conrail employment totaled only one-half of its 1979 level. More important from a budgetary perspective, Conrail has been profitable since 1981, ending the need for further federal subsidies. Indeed, the only remaining direct federal subsidy is the $10 million to $15 million per year paid to Conrail employees who have been laid off.

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3. The Regional Rail Reorganization Act of 1973 (3R Act, enacted January 1974) provided for the establishment of Conrail. The Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act) enabled Conrail to begin operations and initiated the first significant reduction in federal rail regulation since the enactment of the Interstate Commerce Act in 1887.

4. The government originally accepted responsibility for funding Conrail's labor protection payments in the 3R Act (of 1973), which codified lifetime job agreements made by the Penn Central before it went bankrupt.

Another set of policies developed in the 1970s that has significant influence on current rail spending concerns the Railroad Retirement system. Established before the Social Security system, the Railroad Retirement system has its own taxes and benefit payments. As railroad employment declined, however, more and more people ended up working long enough in jobs covered by each system to qualify for benefits under both. By the early 1970s, approximately 40 percent of workers receiving Railroad Retirement benefits also received Social Security benefits. As part of a general overhaul of the system, the Congress decided in 1974 to phase out this "dual" or "windfall" benefit by continuing to pay the dual benefits for existing employees (but not for future employees) out of general funds, rather than out of either the Social Security or Railroad Retirement trust funds.

TABLE 10. FEDERAL INVESTMENT IN CONRAIL, FISCAL YEARS 1974-1984
(In millions of 1984 dollars)

Preconsolidation Loans and Grants (Before 1976)	908
Settlements with Estates of Bankrupt Railroads (1981-1984)	3,160
Purchase of Securities (1976-1981)	4,777
Local Rail Service Assistance (1976-1984)	313
Transfer of Commuter Service Under NERSA a/ (1982-1983)	130
Labor Protection Payments (1976-1984)	686
Total	9,974

SOURCE: Congressional Budget Office.

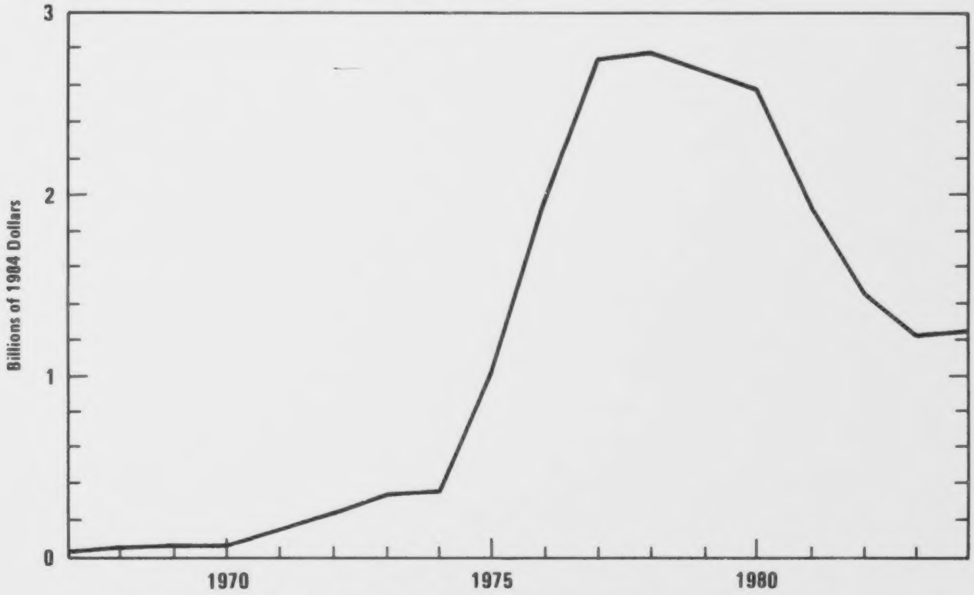
a. Northeast Rail Service Act of 1981.

Trends in Federal Spending

Throughout much of the twentieth century, a succession of federal loan and loan guarantee programs furnished assistance to freight railroads during periods of financial distress. The creation of Amtrak and Conrail in the 1970s led to major increases in federal spending on rail transportation programs, which rose from less than $100 million in 1970 to nearly $3 billion at its peak in the late seventies (see Figure 19). As Conrail has become profitable, federal spending has declined, with the bulk of the funds representing subsidization of Amtrak, investment in the Northeast Corridor Improvement Project, and fulfillment of outstanding commitments for loans and labor protection payments.

Figure 19.

Federal Spending for Railroads, Fiscal Years 1967-1984



SOURCE: Congressional Budget Office from data in *Budget of the United States Government*.

NOTE: Excludes payments of $3.2 billion to estates of bankrupt railroads in 1982-1984 for assets transferred to Conrail. Also excludes $1.2 billion for Amtrak loan defaults in 1984, and Railroad Retirement Board's Dual Benefits Payment Account.

Current Federal Policy

The federal rail program is focused on two areas: financial support of Amtrak and efforts to end federal involvement with Conrail. In addition, the federal government (through the Interstate Commerce Commission) continues limited economic controls over freight railroads and (through the Federal Railroad Administration) regulates safety and provides research support for the industry.

In 1984, federal outlays for rail infrastructure totaled about $1.2 billion, with Amtrak-related spending comprising the bulk of the expenditures.[5] Amtrak received $645 million in operating assistance plus $90 million for capital grants and labor protection. An additional $241 million for Northeast Corridor improvements benefited rail passenger service directly, but outside of Amtrak's budget.

In current dollars, this level of spending has not changed much since 1977. (Current policy, for example, calls for $630 million in operating assistance for Amtrak in 1988 and $112 million for other costs such as capital, labor protection, and Northeast Corridor funding.) This means that, because of inflation, the real amount of federal subsidy for railroads has declined. First, with Amtrak's fleet modernization essentially complete (engines now average five years old), the bulk of the federal capital assistance program has been accomplished. Second, Amtrak's operating record has improved. Systemwide, the portion of its operating costs covered by passenger revenues has increased from 48 percent in 1980 to a projected 60 percent in 1986. These improvements have, in large part, resulted from the mandates of the Amtrak Improvement Act of 1981, which require revenue to cover 50 percent of costs excluding capital costs. In addition, Amtrak is under a legislative mandate to recover 75 percent of its operating costs on the Northeast Corridor (100 percent in 1987). In spite of these improvements, Amtrak received 17 cents per passenger mile in federal subsidy in 1984--23 cents if capital spending on the Northeast Corridor is also included. This subsidy is exceptionally large relative to the volume of traffic the system carries--only three-tenths of 1 percent of all intercity passenger miles. It is also many times the subsidy provided other intercity passenger modes and exceeds the typical fare paid by commercial airline passengers (see Table 11).

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5. An additional $1.2 billion was spent to repay loans issued by Amtrak but guaranteed by the federal government. As a result of this "default" by Amtrak, the interest payments on these loans were transferred from Amtrak's budget to the U.S. Treasury.

While Conrail required $21 million in labor protection payments in 1984, continuing profitability and previous restructuring of its system have reduced the need for these payments after 1985. Current estimates suggest that this entitlement program will cost the federal government $10 million a year. Programs of the FRA and pension subsidies to the Railroad Retirement Board remain nearly unchanged from 1984, with a slight decrease in pension requirements ($392 million for 1986 versus $413 million in 1984).

Other programs of the FRA include railroad safety, research and development, the Northeast Corridor Improvement Project, and (until fiscal year 1986) assistance for local rail service. The Local Rail Service Assistance program, which has provided federal aid to the states since 1976 on a matching basis (70 percent federal), is designed to counteract the effects of line abandonments and service deterioration on light-density branch lines.

TABLE 11. FEDERAL AID TO VARIOUS MODES OF INTERCITY PASSENGER TRAVEL, FISCAL YEAR 1984

Mode of Transport	Net Federal Subsidy Per Passenger Mile (In cents) a/
Intercity Rail	
Amtrak alone	17
Total b/	23
Intercity Bus	0.2
Commercial Aviation	-0.2 c/
Auto	-0.1 c/

SOURCE: Congressional Budget Office.

NOTE: All these estimates include capital spending as well as funds for operations. Except for spending on the Northeast Corridor Improvement Project, capital spending levels represent "steady-state" levels, and as such approximate expected depreciation.

a. Federal outlays less payments of user fees.

b. Amtrak plus spending on Northeast Corridor Improvement Project.

c. User fee payments to the federal government exceeded federal spending.

BUDGET PROPOSALS FOR FISCAL YEAR 1986: ISSUES AND ALTERNATIVES

The two major policy issues before the Congress concern the future of Amtrak subsidies and the sale of Conrail. The Administration has proposed eliminating most federal rail programs beginning in 1986. The 1986 budget request would reduce federal spending from current policy by 45 percent, and by 90 percent in 1988 (see Table 12). The FRA would be left with $65 million in spending for safety programs, research and development, local rail service assistance, and other programs. Railroad Retirement Board pension subsidies would be maintained at current policy levels. The budget makes no provision for separation payments to Amtrak employees who would lose their jobs, on the grounds that these employees are the responsibility of Amtrak, not the federal government. The potential liability for these payments is substantial, with some estimates totaling as much as $2.1 billion over the next five years. Further, the Administration's budget assumes the sale of Conrail through a private offering for $1.2 billion in 1986.

The Senate and the House budget resolutions both assume the sale of Conrail for $1.2 billion, but do not specify the purchaser. They differ dramatically from the Administration on the question of Amtrak, however. The House resolution would cut the federal subsidy to Amtrak by 10 percent in 1986--a level that Amtrak says can be met without major service cutbacks--and would freeze spending at that level in subsequent years. The Senate resolution calls for a 12.5 percent cut in 1986, but would deepen the cut to 40 percent by 1988. While intercity rail passenger service could still continue, the scope and nature of this service would probably have to change significantly.

Future of Federal Subsidies for Amtrak

The Administration proposes to eliminate all Amtrak subsidies in 1986. Since Amtrak estimates that it will cover only 58 percent of its systemwide operating costs and 50 percent of its total costs in 1985, significant changes in its revenue and costs would have to be made for Amtrak to continue service. The major sources of Amtrak's revenue are fares, federal subsidies, and state and local subsidies; major factors determining Amtrak's costs are the scope of the system, the cost of equipment, and labor costs including wages, work rules, and labor protection payments.

TABLE 12. FEDERAL SPENDING FOR RAILROADS, FISCAL YEARS 1984-1988
(Outlays in millions of current dollars)

Program	1984	1985	1988			
			Current Policy	Administration Proposal	Senate Resolution	House Resolution
Grants to Amtrak	735 a/	703	767	0	462	662
Northeast Corridor Improvement Project b/	241	186	44	31	30	43
Rail Service Assistance	98	50	35	18	18	34
Railroad Safety and Research and Development	42	43	44	37	42	42
Other c/	123 d/	104	24	10	23	23
Total	1,239	1,086	914	96	575	804

SOURCE: Congressional Budget Office.

NOTE: Outlays for 1985 and 1988 are CBO estimates.

a. Excludes $1.2 billion for loan guarantee default.

b. Responsibility for this program will be transferred to Amtrak at the end of 1985.

c. Includes Federal Railroad Administration, Conrail and Rock Island Labor Protection, Conrail Commuter Service Transfer, Alaska Railroad Revolving Fund, Redeemable Preference Shares, and United States Railway Association Administration. Excludes Railroad Retirement Board's Dual Benefits Payment Account, which averages an annual $400 million in spending for the 1984-1988 period.

d. Excludes settlements of railroad litigation, totaling $43 million in 1984.

The elimination of all federal aid including any future labor payments, as proposed by the Administration, would almost certainly result in Amtrak's bankruptcy. Through fare and cost adjustments, the Northeast Corridor and certain other routes in high-density areas are capable of fully covering operating costs, and perhaps capital costs as well over the long run. Amtrak's current liability for labor protection payments to workers who would be displaced by the elimination of the remainder of its system would, however, exceed the liquidation value of Amtrak's assets and the contribution that can be made by its high-density routes. However, if the terms of the labor protection payments were renegotiated, or if the federal government assumed responsibility for these payments, Amtrak could continue to operate those portions of its system that can fully cover their operating costs from nonfederal revenue sources.

Another option would be to give Amtrak a transition period in which to increase its revenues and reduce its costs. Continued subsidies during this period would be contingent on continuing wage concessions from all Amtrak employees (including contract employees), replacing the current labor agreement with lump-sum severance payments, and continuing increases in the percentage of costs that must be covered by nonfederal revenues to specified levels in each year of the transition period. The continued, but reduced, federal subsidies would permit Amtrak to maintain operations over a larger service area.

Sale of Conrail

The proposed transfer of Conrail to the private sector raises three related questions: how should Conrail be sold (by private or public offering), for how much, and to whom. The Department of Transportation has reviewed the Conrail purchase offers and has recommended a private sale of Conrail to the Norfolk Southern Corporation for $1.2 billion in cash and a variety of restrictions. In evaluating these offers, the department indicated it would select the bid that would leave Conrail in the strongest financial position after the sale and that would best preserve regional service patterns, while giving the government the maximum financial return consistent with these goals. These goals appear to be in conflict; as the financial return to the federal government increases, the resources available to the railroad may decrease, placing it in a somewhat weaker financial condition.

The Norfolk Southern offer is currently receiving considerable scrutiny on both financial and competitive grounds from Congressional committees as well as from potential competitors of the combined railroad. The net financial return to the government is uncertain for a variety of reasons. While CBO estimates that the proposal would generate $1.4 billion in gross receipts for 1986, the overall financial return must be measured over a number of years.[6] Two major future effects must be considered. First, if the federal government did not sell its stock in Conrail, and Conrail's profitability continued as projected, Conrail would be required to start making payments to the U.S. Treasury in 1988. These payments, representing interest on the debentures and dividends on the preferred stock issued by Conrail in exchange for federal aid, could total $800 million over the next five years. Second, the sale could result in lost revenue to the government, primarily because of Norfolk Southern's ability to shelter its own income with Conrail deductions. The Joint Committee on Taxation has estimated that over the next five years, these losses could amount to $400 million.[7]

Because of uncertainties about financial and tax projections after 1990, it is not clear whether these tax and revenue losses would completely offset the $1.2 billion sale price. In addition, it may be possible to change the terms of the proposed sale to Norfolk Southern to reduce greatly the federal tax loss.

While selling Conrail to another railroad would increase the degree of commitment to staying in the railroad business, it would also decrease competition. To encourage competition, the Department of Transportation has required that certain rail lines in the Midwest be sold to two small railroads. The overall effect of the sale on price and service competition remains a key unanswered question.

An alternative strategy that has received considerable attention is some form of a public offering. Morgan Stanley and Company, an investment banking firm, has put together a consortium of investors willing to purchase Conrail's stock for $1.2 billion; these investors hope to turn around

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6. The actual sum received by the federal government is to be increased by any cash that Conrail has beyond $800 million. If the sale were to be completed on January 1, 1986, this provision would increase federal receipts by some $200 million, to a total of $1.4 billion.

7. In later years there may, however, be a net increase in revenues because of Norfolk Southern's agreement to relinquish Conrail's unused investment tax credits and net operating loss carry-forwards. These concessions may lead to Conrail's (as part of Norfolk Southern) paying taxes earlier than if it continued under government ownership. See Congressional Budget Office's cost estimate of S. 638 contained in *Conrail Sale Amendments Act of 1985*, Report No. 99-98, Senate Committee on Commerce, Science, and Transportation, to accompany S. 638, 99:1 (1985).

and sell the stock to the public at a profit in the near future. This form of a public sale provides a guaranteed return to the government; it may not, however, maximize the financial return to the Treasury.[8] As with Norfolk Southern, the net value of the Morgan Stanley offer should be reduced for the loss of future payments from a government-owned Conrail. Federal tax receipts also might be reduced under the Morgan Stanley proposal. The Department of Transportation and others have criticized this offer because it does not meet their criterion of a purchaser with internal financial resources substantial enough to carry Conrail through future economic downturns.

Another option would be to reopen the bidding process, perhaps considering a true public sale rather than the negotiated prices received so far. Of course, the federal government could also continue to hold its 85 percent share of Conrail's stock for a few more years. Based on projections of Conrail's future net income, this delayed sale option could, in time, provide a greater return than any offered so far. Such an approach includes several risks, including the chance that the federal government's current lack of interference in the day-to-day operation of Conrail could end. Such a "politicization" of Conrail could reduce current management efficiencies. Also, if Conrail were ever to get into financial trouble again, it might be difficult for the federal government to avoid starting another cycle of subsidies.

While a full economic analysis of these proposals is necessary to evaluate their relative merits, the goals of long-term financial strength and service depend critically on the level and volatility of demand for rail transportation in Conrail's service area and on Conrail's own ability to continue to adapt to changed market conditions. The Congressional Budget Office is completing an analysis of these issues for release later this year.

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8. While the Morgan Stanley offer includes a provision giving the government the right to purchase 1 million shares of Conrail at the $48 per share sale price at any time over the next 10 years, the stock so warranted amounts to only 4 percent of the corporation, thus inherently limiting the government's ability to gain from future increases in the stock price of Conrail.

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